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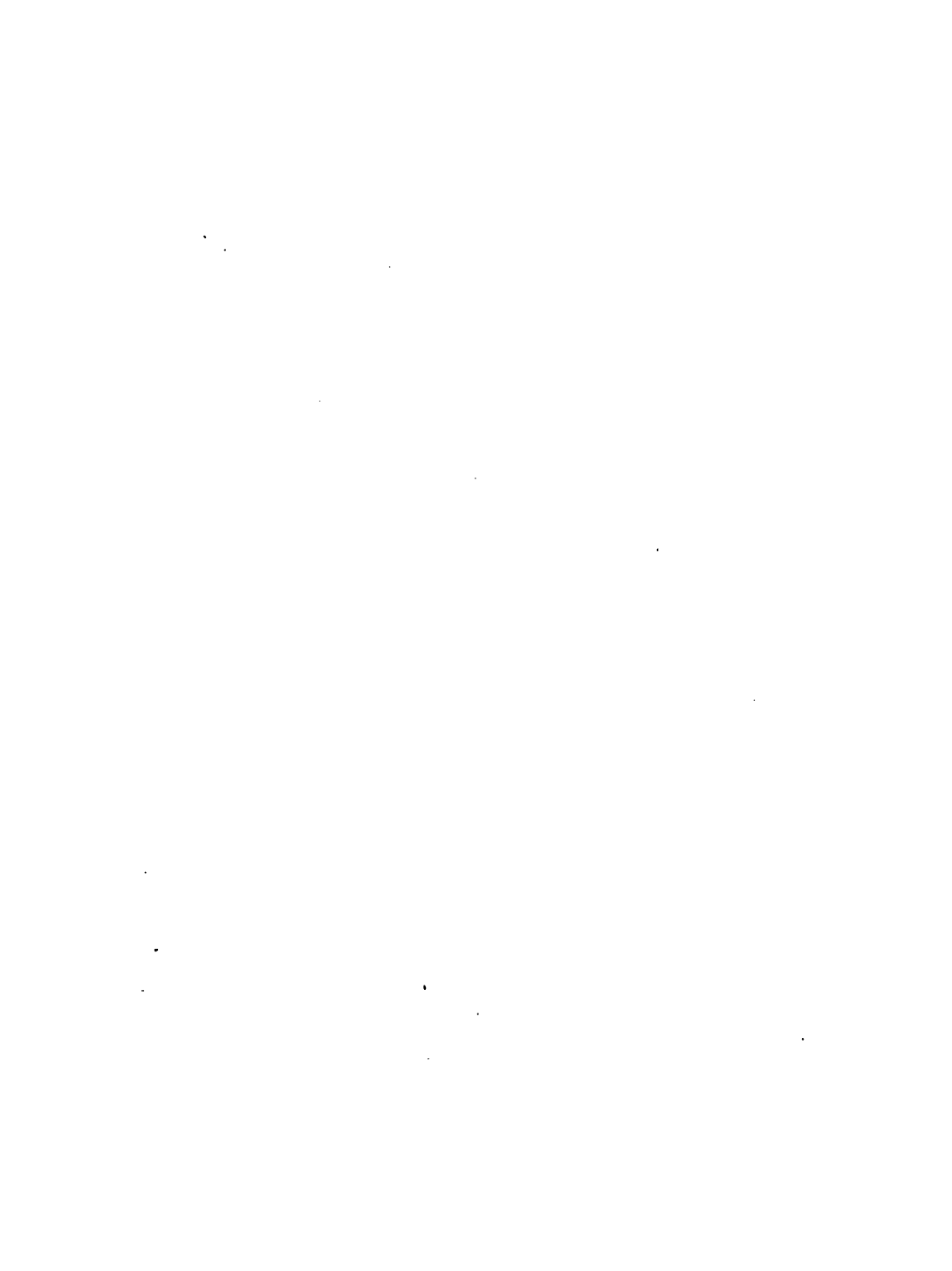


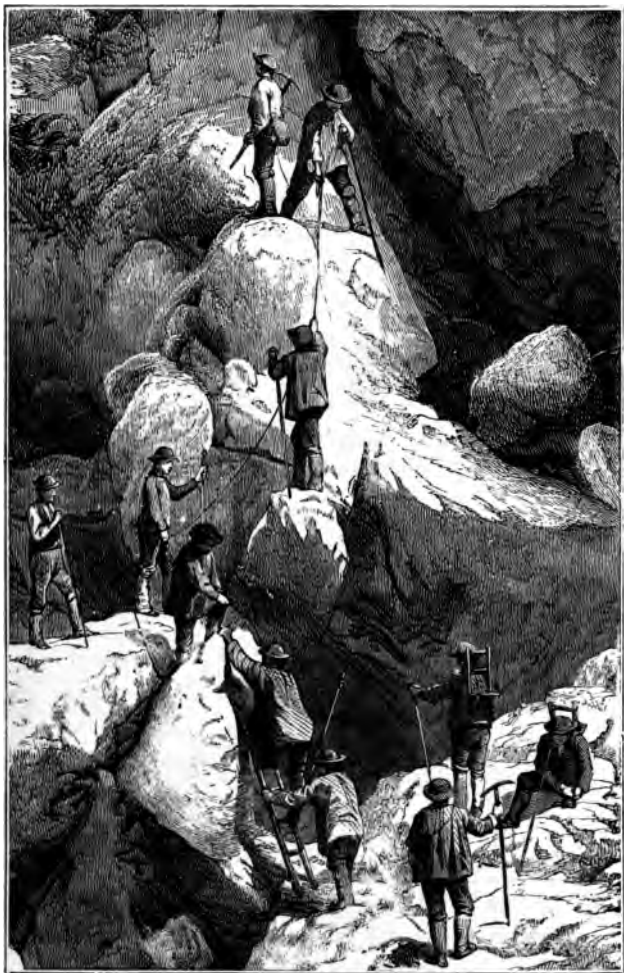
ALPINE ADVENTURE

OR
NARRATIVES OF
TRAVEL & RESEARCH
IN THE ALPS

T. NELSON & CO. LTD.

ALPINE ADVENTURE.





ASCENT TO THE GRANDS MULETS.

ALPINE ADVENTURE;

OR,

NARRATIVES OF TRAVEL AND RESEARCH
IN THE ALPS.

BY THE AUTHOR OF

"THE MEDITERRANEAN ILLUSTRATED,"

"THE ARCTIC WORLD," ETC.



LONDON: THOMAS NELSON AND SONS.
EDINBURGH AND NEW YORK.

1878.

203. g. 360.



CONTENTS.

I. MONT BLANC,	9
II. THE MATTERHORN,	52
III. THE FINSTERAARHORN,	86
IV. ASCENT OF THE JUNGFRAU,	108
V. ASCENT OF THE GALENSTOCK,	143
VI. ASCENT OF THE WETTERHORN,	163
VII. THE WENGERN ALP,	187
VIII. CROSSING THE TSCHINGEL GLACIER,	199
IX. THE ALLELEIN-HORN,	212
X. THE SCHRECKHORN,	227

ALPINE ADVENTURE.

I.

Mont Blanc.

"Mont Blanc is the monarch of mountains,
They crowned him long ago."

BYRON.



THE Alps form the most important European mountain-system, and contain the loftiest peaks. They strike across the north of Italy, from the shore of the Mediterranean, and extend to the borders of Hungary. Geographers divide them into distinct groups or masses, to which distinct names are attached. Thus, from the borders of the Gulf of Genoa to Monte Viso, along a line of about 100 miles, stretch the so-called Maritime Alps; from Monte Viso to Mont Cenis, about 60 miles, the Cottian Alps; from Mont Cenis to the Col de Bonhomme, about 50 miles, the Graian or Graïen Alps; the

Pennine run from the Col to Monte Rosa, 60 miles; the Helvetian, from thence to Mont Bernardine, 50 miles; from Mont Bernardine to the Drey-Herren-Spitz, or Three Lords' Peak, in the Tyrol, 140 miles, the Rhætian; and from thence to the neighbourhood of Vienna, about 200 miles, the Noric Alps. Those lower ranges which lie in the Austrian provinces of Carinthia, Carniola, and Dalmatia, and connect the Alpine system proper with the ranges of the Balkan, are respectively designated the Carnic, Julian, and Dinaric Alps.

The loftiest heights and the most extensive glaciers are found in the Pennine group,—which includes Mont Blanc, 15,750 feet; Monte Rosa, 15,152 feet; and the Matterhorn, 14,837 feet.

Next come the Helvetian, which send their roots far down into the heart of Switzerland, and include the Grabenhorn, 15,440 feet; the Finsteraarhorn, 14,111 feet; and the Jungfrau, 13,718 feet.

The highest passes practicable for pedestrians are the Col de Géant, 11,172 feet, and the Mont Cervin, 11,096 feet, both in the Pennine group. Four carriage-roads cross the Helvetian, and two the Rhætian chain; one of which, through the Stelvio Pass, 9174 feet, is the highest carriage-road in Europe. A railway now crosses the Graian Alps, by means of a tunnel through Mont Cenis.



CARRIAGE-ROAD IN THE ALPS.

The culminating summit of the Alps is Mont
Blanc, which,

“On a throne of rocks, in a robe of clouds,
With a diadem of snow,”

has long reigned supreme among European moun-

tains. Its position is remarkable, for it is almost equidistant between the Pole and the Equator. A huge pyramidal mass, elongated from north to south so that it resembles the hump of a dromedary, girt round with soaring *aiguilles* or pinnacles,



PANORAMA OF THE MONT BLANC CHAIN.

1. Aiguille du Midi. 2. Mont Blanc. 3. Dôme du Gouter. 4. Aiguille du Gouter.

furrowed by enormous glaciers, and shrouded perpetually in ice and snow, it presents a remarkably majestic aspect, and impresses the spectator with a wonderful feeling of sublimity and power. Hence it has long exercised a strange fascination over the minds of men, and its ascent has become one of those enterprises which offer a peculiar attraction to the adventurous. Its summit was first reached by Paccard and Jacques Balmat in August 1785: in the following year it was attained by De Saussure, who made some interesting scientific experiments. Since that time ascents have entered

into the ordinary holiday programme of the bolder class of tourists ; though the undertaking is one which requires considerable strength, endurance, and resolution, and the direction of efficient guides. Several ladies have accomplished it, however : among others, Mademoiselle Paradis, 1809 ; Mademoiselle d'Angeville, 1838 ; Mrs. Hamilton, 1854 ; Mademoiselle Formaren, 1856 ; Miss Walker, 1862. The ascent and descent usually occupy the best part of three days ; but in 1875, a Mr. C. H. Taylor, of Chicago, achieved the task in a little over eighteen hours. He started about 12.30 A.M. on Tuesday, July 27th, and returned to his hotel before 8 P.M. on the following evening. He was accompanied by two guides, a Swiss and a German. A famous dog, named Tschingel, after the first glacier, had succeeded in the attempt in the previous week ; having started on Thursday the 22nd, in the company of his master, Mr. W. A. Coolidge, and his master's aunt, Miss Brevoort, reached the summit on Saturday, and descended in the course of the same day. Tschingel deserves special commemoration in a volume devoted to Alpine-Climbing, for he has ascended Mont Blanc half a hundred times, as well as the Jungfrau, and numerous lesser peaks.

The ascents of Mont Blanc have not always been made from a thirst for adventure or to

...curiosity, but in the
...of science; and to those accom-
...Nauyure, Agassiz, Forbes, Tyndall,
...Martins we are indebted for much of
...of glaciers and glacial phenomena.
...of Science no mountain occupies a
...distinguished place; while it has furnished
...with inexhaustible sources of inspira-
...The story of these ascents, however, has
...often told, and we shall confine ourselves to
...of only two or three of the more re-
...and interesting episodes in its annals.

In August 1874 the ascent of Mont Blanc was
...by Mr. Alfred Wills, the author of
...a very graphic and interesting volume, entitled
...Wanderings among High Alps." With a couple
...friends, and the famous guides Balmat and
...what, he started early in the morning of the
...1st. Below the Pierre l'Echelle they were
...joined by some additional guides and ten porters,
...making in all a very picturesque procession of
...twenty-four individuals. At the Pierre l'Echelle
...they halted for rest and refreshment; and then
...entered upon "that magnificent series of ridges
...and precipices of ice of which the Glacier des
...Bossons is composed." They soon came to a long,
...broad valley, lined on either side by lofty, pre-
...cinitous walls of ice, which opened upon the icy

labyrinth at the junction of the Glacier des Bossons with that of Taconnay. From this point, the ascent to the base of the snowy platform or table-land of the Grands Mulets is exceedingly



THE GRANDS MULETS.

steep and laborious; but any fatigue which the traveller undergoes is amply compensated by the sublime view he enjoys from this elevated posi-

tion. He finds himself on the brink of a precipice hundreds of feet deep, and looks down into the great gulf of the Glacier des Bossons, with all its icy ridges and intricate crevasses. The upper part of the glacier, says Mr. Wills, presents a scene of almost unequalled sublimity. The left-hand side of the picture is occupied by the gigantic Monts Maudits, which dwarf the grand Aiguille du Midi into a mere common peak, and cover the surface of the glacier with a perpetual volley of rocks and ice, hurled from a height exceeding that of the crest of Snowdon above the level of the sea. To the right are visible the huge glittering masses of the Dome; and, in front, the glacier is enclosed by the vast ice-built wall which raises the Grand Plateau a thousand feet in air; while, above all, in solemn splendour, soars the great white brow of Mont Blanc itself,—

“In the wild pomp of mountain majesty!”

At the Grands Mulets our travellers rested until nightfall, watching the passage of a storm of thunder and lightning, which enveloped in a sombre cloud the heights around. At ten minutes past four in the morning of the 1st of September they started on their upward journey, forming two parties of six each, the others awaiting their return on the Grands Mulets. Beneath the

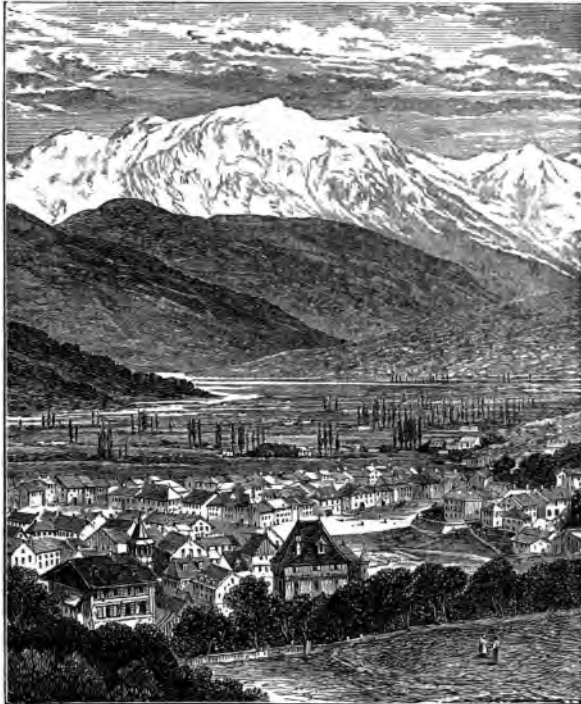
frozen precipices of the Dome they slowly took their way, crossing crevasses of enormous size and depth by slender bridges of ice, and making many a detour before they reached the Petit Plateau, which is one of the recognized stages of the ascent. Here, towering overhead, they saw long walls of ice, actually dipping forward from their bases, upheld by no visible support, and revealing the snow-deposit of fifteen years in distinct strata of varying hues and shades, like courses of masonry; the whole a spectacle of awe and wonder, suggesting the idea that it was the work of Titanic architects.

From the Petit to the Grand Plateau the adventurers climbed a succession of banks of snow, separated from one another by crevasses of great length and depth. Then a short halt was made; for the bitter north-west wind which swept over the snowy surface of the Dome rendered a rest of any duration impossible. In crossing the Grand Plateau, they diverged to the left in order to view the great crevasse into which three of Dr. Hamel's guides were precipitated in 1821 by a tremendous avalanche. Between this point and the base of the Monts Maudits they had to achieve the ascent of the Corridor; traversing in safety several awkward fissures, and then passing into the whitely-gleaming valley formed by the

Monts Maudits on the left and the Rochers Rouges and Mont Blanc proper on the right. No other part of the ascent, according to Mr. Wills, gives so good an idea of the scale on which Mont Blanc is built. "The eye ranges over an expanse of snow so vast and so monotonous that the mind is lost in the contemplation, and receives no distinct or adequate idea of the immensity of the prospect. It is only after you have been plodding on, ascending sharply at every step, for more than half an hour, and find no sensible alteration in the features of the scene,—behold the same interminable waste of snow before you, the same crags apparently as high above you on either side, the Mur de la Côte apparently as distant as ever,—that you become aware of the real magnitude of the greatest of the Alps." It must not be supposed that Mont Blanc is a compact peak, like Ben Nevis or Ben Lomond, the proportions of which are readily estimated, and the whole of which has an unmistakable distinctness and individuality. It is, on the contrary, a mass of mountains, of pinnacles and precipices, of glaciers and vast plains of snow, with one grand summit rising above every other, and claiming the proud title of Mont Blanc.

The Corridor was passed in safety, and the travellers reached the foot of the Mur de la Côte,

where for the first time they looked over the Italian side, and caught a glimpse of the mountains of Piedmont. The Mur is a declivity of

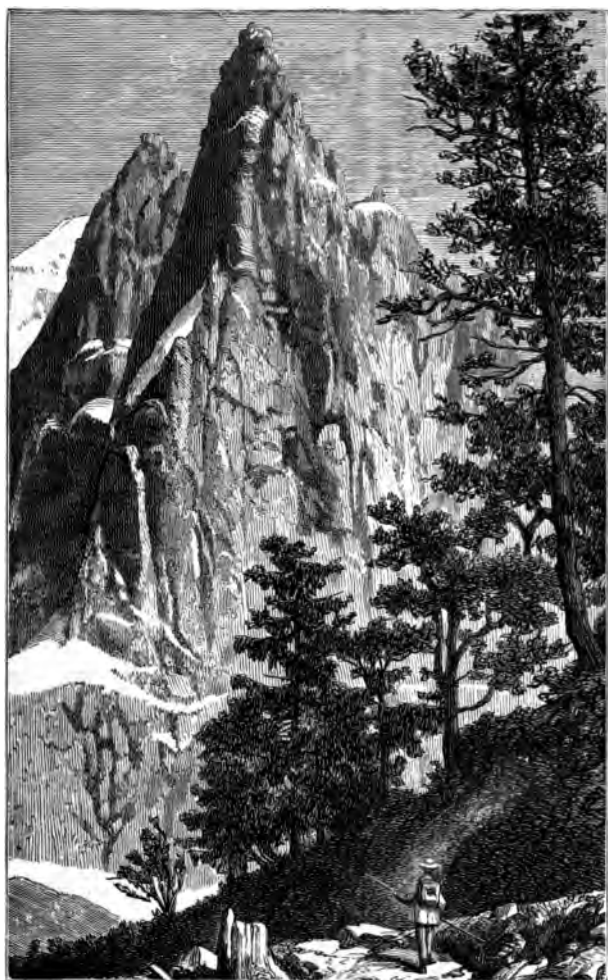


MONT BLANC FROM SALLENCOURT.

hard, glassy ice, perfectly smooth and unbroken, between four and five hundred feet in height. When covered with a good thick carpet of snow

its ascent is comparatively easy, as the snow affords a safe and convenient footing. Otherwise, it can be conquered only by the slow and troublesome process of cutting steps in the ice from bottom to top. Mr. Wills and his companions were not obliged to resort to the latter process, and in about a quarter of an hour they gained the Côte. Thence they scaled another laborious incline to the Calotte, from which they could see a world of peaks beneath them,—the Aiguille du Midi, the Aiguille de Gouter, the Mont Blanc de Jaced, the Dome, the Grandes Jorasses, and the Monts Maudits, the loftiest of the tributaries of the “monarch of mountains.”

An hour's hard work vanquished the Calotte, and the adventurers found themselves on the summit of the loftiest of the Alps. Thence they looked down upon the lower regions, but, owing to the state of the atmosphere, the prospect was considerably limited. It was clear, says Mr. Wills, over the area of a circle of which Mont Blanc was the centre, and the radius of which was perhaps ten or fifteen miles; but beyond that distance they beheld, in every direction, more clouds than it had ever been their lot to see at once before. Mr. Wills describes them as forming a solid rampart all around, built of dense masses up-piled on one another, and reaching



THE AIQUILLE VERTE.



from the earth below to the sky above. The Aiguille Verte was distinct enough, but the Aiguille d'Argentière was concealed by mist and shadow. The Grandes Jorasses presented a perfect forest of black, jagged peaks, emerging from the wastes and wildernesses of snow, and forming a system overpowering in its magnitude. On the Italian side, three peaks alone were islanded in that sea of cloud,—three peaks of immortal renown in the annals of Alpine adventure,—Monte Rosa, the Weisshorn, and the Matterhorn.

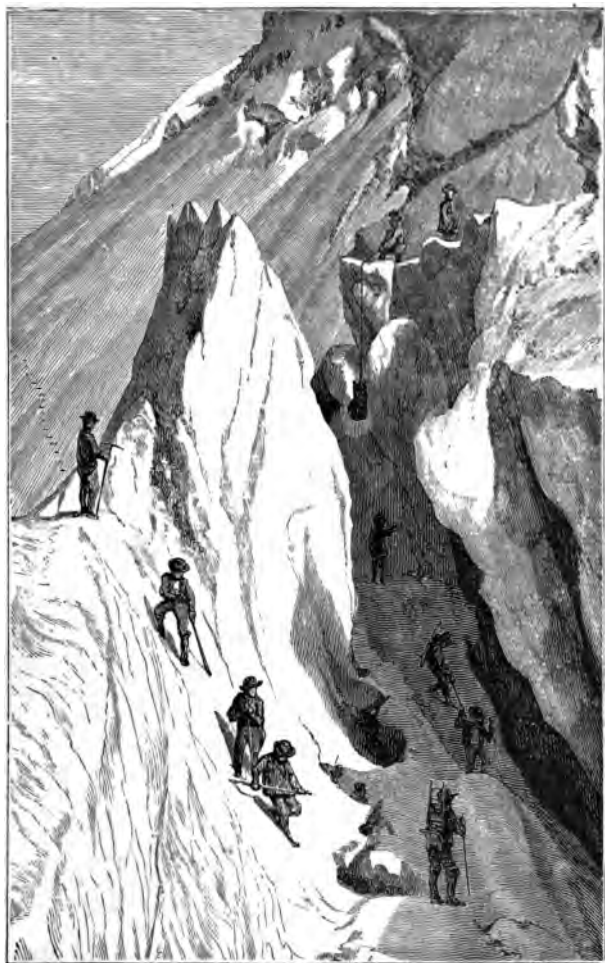
Descending was very different from ascending, yet not so easy as the travellers had expected. In fact, everybody knows that walking in deep snow is productive of intense fatigue; and on the Calotte the snow was mingled with fragments of slippery ice. The Mur de la Côte, however, offered no great difficulty; and in many parts of the descent the chief obstacle was the furious, ice-cold, penetrating wind. At the Grand Plateau a short halt was made; then, at a rapid rate, partly walking, partly sliding, the travellers descended to the Petit Plateau; and, after cautiously traversing the great snow-slopes beneath, intersected as they are with many crevasses, they rejoined their companions at the Grands Mulets in absolute safety, having occupied only two

hours and forty minutes in their downward journey from the summit.

In conclusion, we may add that Mr. Wills is of opinion there is no expedition in the Alps better worth while to undertake than the ascent of their snow-diademed giant. Nowhere else are the wonders of glacier phenomena more splendidly exhibited. Of that remote, still, sublime upper "world of ice" no words can convey other than a faint and inadequate idea. "It is so vast, so pure, and so solemn; the forms are so unutterably majestic; the crevasses so fearful, and yet so marvellously and fantastically beautiful,—so deep, so wide, so blue, and yet so delicately pale,—so fringed and bedecked with festoons and inverted pyramids of icicles; the distances are so great, and yet each object appears so clear and so near; the banks of ice and snow are so steep, and yet swell, and rise, and fall with such perfect and exquisite grace; the daybreak over the 'iced mountain's top' is so glorious and so dazzling; the night so strange and so mysterious, that all description fails."

ASCENT BY M. CHARLES MARTINS.

An ascent of Mont Blanc was successfully achieved in 1844 by M. Charles Martins, a



DESCENT OF MONT BLANC.

French naturalist of distinction, to whom we are indebted for various scientific works. He was accompanied by Auguste Bravais, of the French navy; and Auguste Lepileur, a physician. They quitted Geneva on the 26th of July, following on foot the heavy four-wheeled car which carried their equipments, and reaching Chamounix on the 28th.

Chamounix now-a-days is one of the great centres of European travel. It draws to its picturesque valley yearly hundreds of pilgrims. Not that all ascend Mont Blanc; many are content with the glorious prospect of it that seems to fill the entire scene. An American tourist, Mr. Warner, contends that this is amply sufficient. Is it not enough, he says, to sit at your window and watch the clouds, when they lift from the Mont Blanc range, disclosing splendour after splendour, from the Aiguille de Gouter to the Aiguille Verte,—white needles which pierce the air for twelve thousand feet, until, behold! the great crest of the monarch himself is visible, and the vast expanse of white snow-fields, the whiteness of which is rather of heaven than of earth, dazzling the eyes even at so great a distance? Everybody who is patient, and waits long enough at Chamounix, sees Mont Blanc; but every one does not see a sunset of the royal order. The clouds breaking up and clearing reveal to the delighted



CHAMOUNIX.

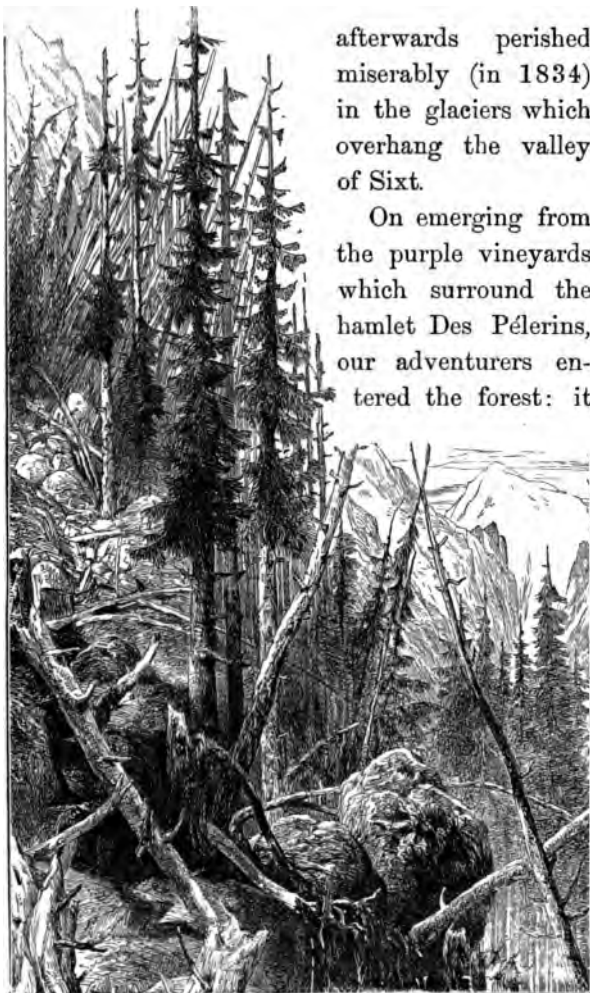
eye peak after peak, and height after height ; wreaths of luminous mist now wreathing the summits, now settling below or hanging in patches on the sides, and again rising aloft, with strange glows and pulsations of colour, until the whole range is clothed in the brilliancy of the evening light. Soon the snow catches fire from the fires above, and wide fields are lit up with quivering flame, and the summits are touched with a celestial rose-red. Only Mont Blanc, afar off and impassive, still retains its pure cold white-

ness, and seems to dwell alone "in a kind of regal inaccessibility."

M. Martins and his friends had brought from Paris a military tent and other necessities. They had also numerous physical and meteorological instruments, and three days' supply of provisions. In all, their baggage weighed eight hundred weight and three quarters, to be transported to an elevation of ten thousand feet above the valley. As each porter carries only thirty-three pounds, it is no wonder that M. Charles Martins and his friends found themselves at the head of a retinue of forty-three persons; three being guides, —Couttet, Mergnier, and Balmat,—thirty-five porters, and two young people of the valley, who had asked permission to accompany them. On the 31st of July, at half-past seven in the morning, they quitted Chamounix. The weather was beautiful, though, as the wind blew from the south-west, and the barometer had slightly sunk, the travellers had not much confidence in its continuance. Along the right bank of the rushing Arve, and through green and smiling meadows, wound the gallant procession. On arriving opposite the hamlet Des Pélerins they turned to the left. The last house in the village is that of Jacques Balmat, the courageous peasant who first scaled the virgin snows of the mighty peak, and

afterwards perished miserably (in 1834) in the glaciers which overhang the valley of Sixt.

On emerging from the purple vineyards which surround the hamlet Des Pèlerins, our adventurers entered the forest: it



PATH OF THE AVALANCHE.

is composed of tall firs and aged larches, the withered branches of which are festooned with long wreaths of gray lichens. In the preceding spring an enormous avalanche, loosened from the Aiguille du Midi, had dug a deep furrow across the forest, like a colossal ploughshare. Uprooted trees now strewed the soil which they had formerly shaded; others had been split in twain, and their shattered crests lay at their feet; some, with roots laid bare, hung inclined towards the valley. These results are due to the pressure of the air impelled before it by the avalanche, to the local wind it creates, and partly to its own mass.

The caravan separated in the wood, and each man sought out his own path. A narrow track skirts the precipice, washed by the torrent of the Pélérins, and leads to the moraine of the Glacier des Bossons; then it mounts in the midst of the heaped-up crags which compose it, and reaches the Pierre de l'Echelle, an enormous rock, under which is concealed the ladder always employed in crossing the crevasses of the glacier. This stone or cliff is 8050 feet above the sea-level, or about the same elevation as the Hospice of St. Bernard. There the daring climber bids farewell to earth,—he quits it to set foot upon the glacier,—and thenceforward, even to the summit of Mont Blanc, he meets only with a few iso-

lated rocks, rising, like islands, out of a sea of eternal snow.

On the occasion of the ascent of M. Martins, the *cirque* of the Glacier des Bossons was—as it always is—a chaos of *séracs*,* *aiguilles*, and pyramids of ice, into the midst of which plunges the eastern wall of the Grands Mulets. The vertical layers of which these walls are built up differ considerably in height, and form, as it were, a series of steps, by means of which it is possible to climb to every point. The rock, decomposed under the influence of the atmospheric agents, accumulates between the layers; and in this rude soil, sheltered by the cliff, warmed by the sun which it reflects, and moistened by the snow, flourish some charming Alpine plants. In a few weeks these accomplish all the phases of their vegetation. Of phanerogamic plants M. Charles Martins estimates there are twenty-four species, and to these must be added twenty-six species of mosses, two hepaticas, and thirty lichens, bringing up to eighty-two the total of the plants which grow on these isolated rocks, in the midst of a sea of ice, deprived apparently of every kind of vegetation. But more: these plants serve as the nourishment of a rodent, the *campagnol des neiges*, which of all

* Cubical masses of compact snow, resembling the *séracs*, or Swiss cheeses.

mammals lives at the highest level in the Alps, though nearly all its congeners are inhabitants of the plain.

Bravais had undertaken the task of measuring the variations of the magnetic intensity with the height. For this purpose he employed a compass in which a needle is suspended horizontally to a thread of raw silk. This needle is made to oscillate during a series of perfectly equal intervals of time, and by the number of oscillations is computed, after infinite and minutely careful corrections, the relative intensity of the magnetic force of the place compared with that of Paris, which is taken as equal to unity. The reader will appreciate the importance of these measurements when we remind him that it is hoped they will one day reveal the still mysterious laws of the currents which circulate around the terrestrial globe—that colossal magnet, the two poles of which do not coincide with the two extremities of the ideal axis around which the earth describes its daily revolution.

Meantime the sun approached the horizon. Already he had disappeared behind the mountains of Vergy; the valleys of Sallenche and Chamounix had long slept in the shadow, while the neighbouring granitic points seemed to glow red-hot,

like iron just taken from the furnace ; soon, too, the Aiguille of Varens and the rocks of the Fiz were extinguished, and the gloom spread to the glaciers of Mont Blanc. The snow, so luminous but a moment before, assumed the ghastly livid tint of a corpse ; the death-chill seemed to invade those regions along with the advancing obscurity, and to reveal all their horror. The Aiguille of the Gouter, and the Monts Maudits, paled in quick succession ; only the crest of Mont Blanc remained illuminated for some time longer, until its living rose-tint also gave way to the livid hue, as if life had deserted it in its turn. Towards the horizon, above the sea of clouds, the sky appeared of a bright green colour, resulting from the combination of the yellow rays of the sun with the blue of the celestial vault ; the contours of the isolated clouds were circumscribed by an orange border of the greatest splendour. In those lofty regions that soft gloaming-light which has such a charm in the leas and vales is wholly unknown ; night abruptly follows day.

Our explorers sheltered themselves behind a wall of stone which had been raised in front of a cavity. Their guides were grouped on the terraces of the rock, around small fires which they laboriously kindled with juniper-wood brought from the vicinity of the Pierre de l'Echelle ; they sang

in unison some slow monotonous songs, which derived from the scene and time a melancholy sweetness. Gradually the voices ceased, the fires died out, and no sound could be heard but that of the avalanches down-thundering from the neighbouring heights. Before long the moon arose behind the Monts Maudits, and silvering, though unseen by our travellers, the Dôme du Gouter, illuminated the snows with a strange phosphorescent radiance. When it had passed the Aiguille du Gouter, it was surrounded by a greenish aureola, which shone defined upon a sky as black as ink; the stars sparkled brightly; the wind did not subside, but blew in strong and abrupt gusts, succeeded by a moment of perfect calm. Everything betokened bad weather on the morrow, and yet not one of M. Martins' party breathed the word "return:" all wished to exhaust their last chance, and not to give up until it was absolutely impossible to continue the ascent.

Next morning, while they were engaged in readjusting the burdens of the porters, M. Martins suddenly caught sight of an old man, unknown to the exploring party, who was slowly ascending the acclivity leading to the Petit Plateau; stooping upon the snow, and sometimes supporting himself by his hands, he progressed slowly, but with the firm and measured step which indicates the

trained mountaineer. This old man proved to be Marie Couttet, aged eighty, who in his youth had acted as guide to De Saussure. Formerly his surprising agility had procured him the sobriquet of "The Chamois." And he well deserved it. No one excelled him in intrepidity. One day he accompanied an English tourist on a difficult journey. The Englishman preserved throughout the air of cool indifference characteristic of the true "gentleman," and the most rugged and perilous passages drew from him neither a gesture of astonishment nor a word indicative of the slightest hesitation. Irritated by his imperturbable composure, Couttet bethought himself of a venerable pine which projected horizontally over the edge of an escarpment three hundred yards in depth; he marched boldly along the trunk, and on gaining the extremity sat down upon it, and then suspended himself by his feet above the precipice. The Englishman looked on without emotion, and when Couttet returned to his side, gave him a piece of gold on condition that he did not repeat the exploit. Such, in his youth, was the man who preceded M. Charles Martins up the lower slopes of the Petit Plateau. His intellect had grown feeble before his body: he thought he had discovered a new route to the summit of Mont Blanc, and recommended himself to every tourist

who attempted the ascent. Though his offer was refused, he would still go as a volunteer, up to a certain elevation, in order to demonstrate the excellence of the new route he had discovered. Knowing the old man's monomania, we had carefully concealed from him the day of our departure; but having learned that we were at the Grands Mulets, he had started on the same evening, crossed the glacier, and towards midnight arrived at our bivouac, where he took his place around the fire with our guides. At dawn he was the first to start, to point out the track.

The Grand Plateau is a vast *cirque* of snow and ice, the bottom of which is a plain slightly raised towards the south. But M. Martins had scarcely time to determine the configuration of places, the clouds having completely enveloped him and his companions, and the snow whirling in dense showers around their heads. There was no time to hesitate; either they must immediately redescend or erect their tent. Two porters, Auguste Simond and Jean Cachat, offered to remain with the three travellers and the guides. The others flung their loads down upon the snow, and hastily made their way towards the Petit Plateau: they disappeared like shadows in the mist, which every moment increased in density.

Left alone, the little band of courageous souls began by removing the snow, to the depth of thirteen or fourteen inches, over a rectangular space thirteen feet long by six and a half feet wide; then, guided by a rectangular cord which had been previously prepared, each knot of which corresponded to one of the stakes of the tent, they planted in the snow some long, strong, wooden plugs, of which the head was furnished with a hook. This done, the tent was raised on the cross-beam and two supports which formed its framework, the buckles of the ropes being passed around the head of the plugs. The adventurers then hastened to get their instruments under cover, and next their provisions. And well was it they lost no time, for several bottles of wine left outside could not afterwards be recovered, being buried deep by the falling snow in less than an hour. Beneath the tent they improvised a kind of flooring, by placing some light planks of deal upon the snow. At one end reposed the guides, and at the other their employers; and so narrow was the space that no one could stand upright—he must remain seated or recumbent. The “kitchen” occupied the centre. The first step was to melt some snow in a vessel warmed by the flame of a spirits-of-wine lamp; for at such an elevation coal burns very badly. Bravais hit

upon the lucky idea of pouring the hot water on the tent-pegs; and as the water froze immediately, instead of being sunk in shifting snow, they were soon embedded in masses of compact ice. Besides, a rope fixed to the bolt which joined the horizontal main-beam to one of the vertical supports, and attached like a shroud to the side from which the wind blew, was stoutly moored to a couple of stakes thrust into the snow. These precautions taken, our explorers had nothing to do but to wait. All observations were impossible, except those of the barometer in the tent, and of a thermometer outside. The former marked $2^{\circ}.7$ below zero on their arrival; at two o'clock it had sunk to $-4^{\circ}.0$; and at five, to $-5^{\circ}.8$. Meanwhile, night had gathered in, and they lighted a lantern, which, suspended above their heads, illuminated the little "interior." The guides, huddled together, conversed in a low voice, or slept as tranquilly as in their beds. The wind redoubled its violence; it blew in gusts, interrupted by those moments of profound calm which had been a source of astonishment to Saussure in similar circumstances. The wind raged furiously in the vast amphitheatre of snow, on the edge of which their little tent was placed. A veritable avalanche of air, the wind seemed to crash down upon them from the summit of Mont Blanc.

Then the canvas of the tent expanded like a sail filled by the breeze; the supports bent and vibrated like the strings of a violin; and the horizontal main-beam yielded in a curve. Instinctively they supported the canvas with their backs while the gale lasted, for their safety depended on the solidity of this comparatively frail asylum. By stepping outside, they could easily form an idea of what would become of them if it were carried away. M. Charles Martins remarks that until now he had never been able to understand how travellers, full of health and vigour, had perished at only a few paces from the spot where the storm had surprised them; but his experience on this occasion assisted him in comprehending it.

Within the tent the cold was insupportable. The thermometer oscillated between 2° and 3° above zero. Their goat-skin clothing and sheep-skin bags protected them sufficiently, though the hair of the pelisse was glued by the ice to the canvas of the tent. During the night the wind diminished in violence. Unfortunately for our mountain-climbers, the temperature continued to decrease; and at half-past five in the morning the thermometer marked $-12^{\circ}.1$. The freshly-fallen snow was twenty inches thick: but the canvas of the tent was not covered with it, the wind having swept it away as fast as it fell; and it continued

to drive horizontally great clouds of hail and snow from the Grand Plateau. The barometer remained as low as on the preceding evening. During a brief interval of calm, the summits of Mont Blanc, the Monts Maudits, and the Dromedary became visible; all terminated by a white crest in a north-easterly direction. This was the snow which the south-west gale had driven through the air.

It was impossible to ascend to the summit: even on the Grand Plateau the adventurers were doomed to inaction. Recognizing the uselessness of struggling against adverse circumstances, they arranged their instruments in the tent, and closed up its entrance with snow. This was at seven A.M., when the thermometer still indicated seven degrees below zero. The recently-fallen snow having hidden every chink and crevasse, they fastened one another to the guiding rope, and descended rapidly to the Grands Mulets. After a few minutes' rest, they traversed the Glacier des Bossons. The narrow pathway leading to the Pierres Pointues, covered by the fresh snow, had become slippery and difficult. The snow had fallen still lower down—as low even as the place called the Bacures Dessous, which is only 2500 feet above Chamounix. Their return reassured everybody; for bad weather had prevailed in the valley as on the summits, and

a rumour had got abroad that the adventurers had perished.

On the 25th of August, however, the weather changed to fair; the barometer rose steadily, and a north-west wind blew gently in the upper regions of the atmosphere. M. Martins knew that his tent was still standing on the Grand Plateau—he had sighted it from the ridge of the Brevent; but it seemed to be buried deep in snow on the south-west side, while the opposite was swept completely clear. Assured, therefore, that they would find their instruments in good order, they started again on the 27th—the three enthusiasts of science—at half an hour after midnight. The moon brightened their march; and at half-past three they reached the Pierres Pointues. The sky was serenely pure, only a few isolated clouds resting on the Col de Balme and the Monts Vergy. A fresh and steady breeze, and the subdued scintillation of the stars, were signs of favourable weather. Castor and Pollux beamed with a tranquil light above the Aiguilles of Charmoz.

On reaching the upper precipices, our travellers closed up their line, and were careful that the angles formed by their zigzags should open fifteen degrees at least. They sank to their knees in the snow, the temperature of which was uniformly $-11^{\circ}.0$ at a depth of four inches. The rarefaction

of the air and the thickness of the snow, from which they were every moment compelled to extricate their limbs, forced them to move slowly: at every twenty paces they halted—suffocated, with their feet painfully cold, and on the point of freezing. During their brief halts, they struck them with a stick to warm them and restore the circulation. This portion of the ascent was very fatiguing; however, an unclouded sun and a tranquil atmosphere favoured their exertions. But on reaching the declivity which separates the Rochers Rouges from the Petits Mulets, they suddenly caught sight of the heights to the south of Mont Blanc, and, beyond these, the plains of Italy. But they had no longer any shelter: the north-west wind, previously imperceptible, carried off Mergnier's hat; and M. Martins says that, though he was thickly clad, he suddenly felt as if stripped to his skin, so cold was the wind and so penetrating. Striking obliquely to the right, they soon reached the Petits Mulets—some protogenic rocks situated at five hundred feet below the summit.

And now they were near their goal. But they marched slowly, with heads drooping, chests panting, like a convoy of invalids. The rarefaction of the air made itself painfully felt: every moment the procession halted. Bravais tried how long he

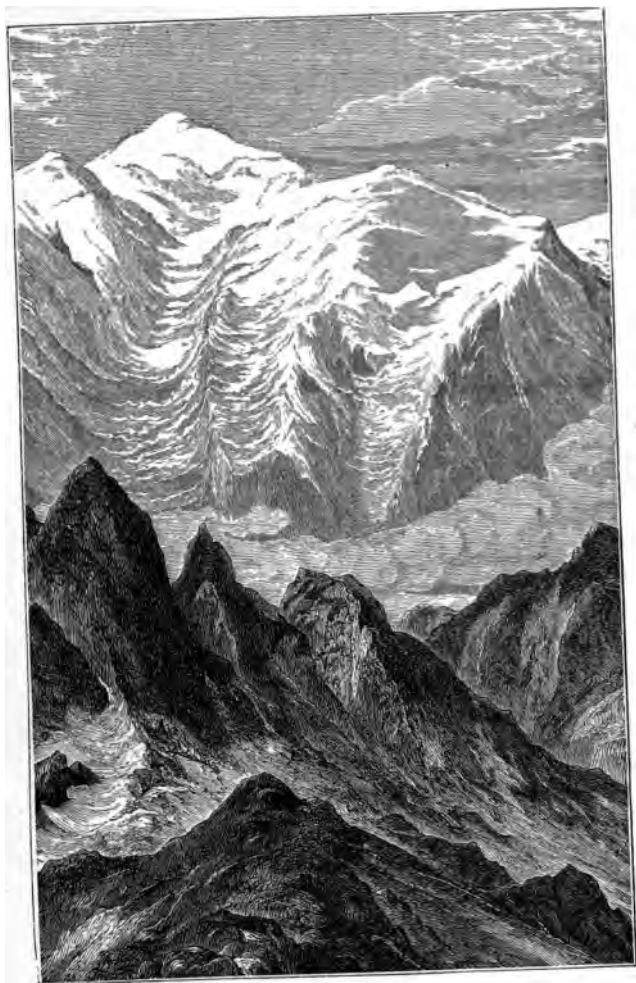
could push forward, using his utmost speed : at the thirty-second step he was brought to a standstill, incapable. At length, at a quarter to two, they attained the eagerly-desired summit, which consists of a ridge running east-north-east to south-south-west. This ridge was not, as Saussure had found it, a narrow knife-like edge, but fully sixteen to twenty feet in width. On the north side it abutted on an immense snow-slope, with an inclination of from forty to forty-five degrees, which terminates at the Grand Plateau ; southward, it is continued with a small, smooth, level surface, parallel to the crest, inclined about twelve degrees, and some three hundred and thirty feet in breadth. This surface is prolonged towards the south, where it connects itself to a rapid slope, abruptly interrupted at the level of the great rocky precipices which overhang the Allée Blanche. After recovering their breath, they hastened to enjoy the magnificent panorama spread out before them in all the rich colouring of the cloudless day. Its details we have already described in our sketch of De Saussure's ascent.

It does not appear that the height of Mont Blanc has varied materially since it was first measured by Schuckburgh in 1775. This uniformity is certainly astonishing, when we remember that the summit is composed wholly of ice

and snow, to a depth, according to De Saussure, of nearly two hundred and twenty feet. It appears evident that Mont Blanc, like the neighbouring Aiguille du Midi, is a pyramid. The Rochers Rouges, the Petits Mulets, the Tourette, are the still projecting points of this pyramidal colossus; the remainder is covered with a hood or cap of snow, which does not melt on account of the elevation of the mountain. The temperature of the air on the summit is rarely as high as zero, but nearly always very far below it. If the reader asks how it is that the thickness of this hood of snow is always the same,—how it is that the altitude of the mountain does not change according to the seasons, and even according to the years,—we answer that in reality the quantity of snow which falls there, the winds which sweep it, the evaporation which diminishes its thickness, the condensation of the clouds which increases it, vary from one year to another, so that the form of the summit is never the same. If he will compare the descriptions of De Saussure, Clissold, Markham Sherwill, Henry de Tilly, and Bravais, recorded successively in 1787, 1822, 1827, 1834, and 1844, he will see that each of these travellers found a difference in configuration, except in the fundamental character—a ridge, like an ass's back, running from north to south. How could it be

otherwise? Torrents of snow, brought on the wings of the wind from every point of the compass, descend upon Mont Blanc. They have scarcely fallen before they are swept away, displaced, carried off, until their surface resembles that of a carefully cultivated field. Even in the fairest weather, when the most absolute tranquillity prevails in the plain, a light smoke seems to escape from the summit, drawn out horizontally by a strong wind: if in a southerly direction, it is a good sign. It is, the Savoyards say, "Mont Blanc smoking its pipe." But in the aggregate, all these varied causes of ablation and increase balance one another, so that the height of the summit continues uniform. Nature never proceeds on any other principle: nothing is always and absolutely stable; everything changes—the atom as the ocean. This oscillation round a certain mean is the fixity of life: immobility is death; and the general forces of Nature, which govern the organic as well as the inorganic world, never rest.

M. Martins had scarcely completed his meteorological and geodesical operations, when the sun drew near the lines of the Jura in the direction of Geneva: it was a quarter past six, and the thermometer indicated $-11^{\circ}.8$ for the temperature of the air, $-17^{\circ}.6$ for that of the snow on the sur-



MONT BLANC FROM THE BREVENT.

face, and $-14^{\circ}.0$ at eight inches in depth. The travellers found it exceedingly painful to come in contact with the snow, even through their thick boots. However, they endured their sufferings bravely. They would fain have lingered on the peak long enough to kindle some fires which might be visible, according to agreement, to the astronomers of Geneva, Lyons, and Dijon—for these, if simultaneously observed from the three cities, would have enabled their differences of longitude to be accurately determined; but the keen, biting air was so intense that further delay would have been fatal to life. Auguste Simond expressed an intention of remaining behind for this purpose; but his companions very prudently refused to allow him. And since that time the desired result has been obtained without difficulty by means of the electric telegraph. Departure was resolved upon; and the triumphant *ascensionists*—may we use the word?—were beginning to descend, when they were suddenly arrested by the most magnificent spectacle which man has ever contemplated.

The shadow of Mont Blanc, forming an immense cone, extended to the whitely-gleaming mountains of Piedmont. It advanced with majestic slowness towards the horizon, and rose high into the air above the Bocca di Nonna. But then

the shadows of the other mountains successively blended with it, as the sun sank behind each great peak, and formed, as it were, a regal retinue for the monarch of the Alps. By an effect of the perspective, all converged towards it; and these shadows, of a greenish blue towards their base, were surrounded by a very vivid purple tint, which shaded softly into the rose of the heavens. It was a splendid spectacle. A poet might have said that angels with kindling pinions inclined around the throne on which sat the Invisible Presence of the Deity. The shade passed from the sky; and still the travellers stood as if rooted to the spot—motionless, but not mute with astonishment, for their admiration found expression in involuntary cries and exclamations. Only the auroras of Arctic Europe can furnish a spectacle equal in magnificence to the unexpected phenomenon which none before M. Martins and his companions had beheld from the summit of Mont Blanc.

The sun was sinking fast, and the travellers must set out. They fastened themselves all to one rope, and descended hastily towards the Grand Plateau. When passing near the Petits Mulets, M. Martins found a couple of stones among the snow, and, from the glassy beads upon their surface, knew they were fragments of rock dis-

persed by the lightning which so often strikes these lofty peaks. After leaving the Petits Mulets they made no further halt, but descended, "like an avalanche," in a straight line, and without picking out their route. Each one was dragged on by his predecessor; and Mergnier, leading the way, sprang with leaps and bounds down the declivity, sinking at every movement into the snow, which sufficiently moderated the impetus of the swift procession. On reaching the Grand Plateau, they paused a moment to take breath; resumed their rapid march; and finally reached their tent at a quarter to eight. In fifty-five minutes they had descended from the summit, which is fully 2500 feet above the Grand Plateau.

II.

The Matterhorn.



THE Matterhorn, or "Mont Cervin," is one of the grandest and most impressive of the Alpine peaks. Its form, says a graceful writer, always excites the admiration of travellers, and no description can do it justice. A remarkable circumstance about it is, that it seems to start up bodily from a glacier, and to stand by itself in majestic isolation, unencumbered by the too close proximity of any ridge to dwarf its height, or impede the view of its sublime proportions. Professor Forbes' describes it "as beyond comparison the most striking natural object he had seen; an inaccessible obelisk of rock, not a thousand feet lower than Mont Blanc." It belongs to the great range of the Pennine Alps, and is situated to the southwest of Zermatt, in the neighbourhood of Monte Rosa, the Mischabelhörner, and the Weisshorn. Its total elevation is 14,705 feet.

Mr. Ruskin finely describes it as "a fragment of building among the Alps; a fragment of some size; a group of broken walls, one of them overhanging, crowned with a cornice, nodding some 150 feet over its massy flank, 3000 feet above its glacier base, and 14,000 feet above the sea,—a wall truly of some majesty, at once the most precipitous and the strongest mass in the whole chain of the Alps, the Mont Cervin. It has been falsely represented as a peak or tower; but is, in truth, a vast ridged promontory, connected at its western root with the Dent d'Erin, and lifting itself, like a rearing horse, with its face to the east. All the way along its flank, for half a day's journey on the Zmutt Glacier, the grim black terraces of its foundations range almost without a break; and the clouds, when their day's work is done, and they are weary, lay themselves down on these foundation steps, and rest till dawn, each with his leagues of gray mantle stretched across the grisly ledge, and the cornice of the mighty wall gleaming in the moonlight, 3000 feet above."

The eastern face of the promontory is hewn down from crest to base as if by the sweep of a sword; hewn concave and smooth, like the hollow of a wave. On each flank of it is set a buttress, both of about equal height, their heads sloped out from

the main wall about seven hundred feet below its summit. The most important is on the north. Sharp as the frontal angle of a bastion, and sloped sheer away to the north-east, it throws out spur beyond spur, until it terminates in a long low curve of russet precipice, at the foot of which lies, level as a lake, a great bay of the glacier of the Col de Cervin. This spur is one of the few points from which the mass of the Matterhorn is approachable. It is a continuation of the masonry of the mountain itself, and supplies us with opportunities of examining the character of the materials. "Few architects would like to build with them. The slope of the rocks to the north-west is covered two feet deep with their ruins, a mass of loose and slaty shale, of a dull red-brick colour, which yields beneath the feet like ashes, so that, in running down, you step one yard and slide three. The rock is indeed hard beneath, but still disposed in thin courses of these cloven shales, so finely laid that they look in places more like a heap of crushed autumn leaves than a rock; and the first sensation is one of unmitigated surprise, as if the mountain were upheld by miracle; but surprise becomes more intelligent reverence for the Great Builder, when we find, in the middle of the mass of these dead leaves, a course of living rock, of

quartz as white as the snow that encircles it, and harder than a bed of steel.

"It is only one of a thousand iron bands that knit the strength of the mighty mountain. Through the buttress and the wall alike the courses of its varied masonry are seen in their successive order, smooth and true as if laid by line and plummet [only on the eastern side, however]; but of thickness and strength continually varying, and with silver cornices glittering along the edge of each, laid by the snowy winds and carved by the sunshine."

The Matterhorn was long regarded as inaccessible; and though Professor Tyndall made an attempt in 1860, and again in 1862, he failed to reach the snow-clad summit. In 1868, however, he repeated the gallant effort, and not without success. On this occasion his design was to start from Breuil, reach the summit, and descend on the opposite side to Zermatt. The enterprise was a peculiarly daring one, for none could even conjecture what difficulties it might involve. He found, however, a resolute and wary guide in Joseph Maguignaz, of Val Tournanche; and having made every necessary arrangement, started at an early hour on Sunday morning, July 26th.

The weather auspices were not very favourable.

The east at sunrise lowered heavily, and the light which pierced through the chinks and crannies of the clouds fell across the mountain-necks in ominous bars of red. Two guides and two porters were considered necessary for the first day's climb. A volunteer, moreover, attached himself to the party, and carried a sheep-skin as part of the furniture of the cabin. To lighten their labour, the porters took a mule with them as far as the quadruped could climb, and afterwards divided the load among themselves. By this time the sun had risen with considerable power, and broken up into fragments the cloudy mass, which rolled dispersedly over the ridges into Switzerland. With the exception of an occasional wreath of mist, the Matterhorn remained clear, and hopes were entertained that the weather was progressing in the right direction.

They halted at the base of the Tête du Lion, a bold precipice formed by the sudden termination of the ridge which flanks the Val Tournanche to the right. From its base the Col du Lion stretches across to the Matterhorn; the Col having been scaled by Professor Tyndall and Mr. Hawkins, with two guides, in 1860. They had now reached a snow-gully, which bore numerous traces of a rough and rapid descent of stones. Here each man made such arrange-

ments as would enable him to accomplish the passage in as short a time as possible ; no small risk being incurred from the flying shingle. Then the adventurers began to mount the rocks: Joseph Maguignaz first, Tyndall next, Pierre Maguignaz third, and then the porters. Suddenly Joseph exclaimed—" *Cachez-vous !*" Professor Tyndall had just time to huddle himself against the rock when a boulder hurtled past, smiting the rocks below him, and, with a crash, tumbling down upon the lower glacier. Accepting the warning, the party turned aside to an *arête*, so as to escape this strange mountain-artillery.

After steadily climbing for some hours, they halted upon a platform beside the wreck of the tent pitched there by Professor Tyndall in 1862. Here they basked in the sun, and took their ease, until they had recruited their energies. Resuming the work, they scaled the crags with equal skill and resolution, and carefully "doubled" the bases of the battlemented rock-towers into which the slow influences of Time have moulded the southern ridge of the Matterhorn.

To the observer safely posted at Breuil, the Matterhorn presents two summits: one, the summit proper, a kind of square rock-tower or bastion ; the other, which is really nothing more than the end of a sharp ridge abutting against the true



THE MATTERHORN.

summit, rises into an apparently conical peak. Upon this peak Tyndall had made his mark in 1862. At some distance below it an almost horizontal ledge, perpetually covered with snow,

traverses the mountain, and exhibits an appearance which has suggested for it the designation of the *Cravate*. To this point the adventurers now made their way, and reached a cabin which had been erected here in 1867.

Their first need was water; and they contrived to supply it in a very ingenious manner, without expending their fuel. The cliff at the base of which stood the hut overhung it considerably, and from its projecting edge the liquefied snow poured down in copious showers. Four ice-axes were fixed on the ledge, and over them was spread the canvas of an old tent, in such wise that the water falling upon it glided towards a central orifice, and thence descended into vessels placed to receive it.

For some hours the professor enjoyed the glowing sunshine, with his gaze fixed on the mountain-forms around him, and his fancy kindled by the atmospheric mutations. At sunset he retired to his hut; and all the party, wrapping themselves in sheep-skins, lay down to rest, and soon sank into that dreamless sleep which rewards the exertions of the mountain-climber.

Soon after six o'clock the next morning, Tyn-dall and his guides, leaving the porters behind them, proceeded to attack the more elevated part of the mountain. They skirted the *Cravate*,

reached the western extremity of the ridge, and ascended to the conical peak already described. From this point to the base of the final precipice of the mountain stretches a rugged *arête*, called by the Italians the Spalla, loaded with snow, but preserving an almost knife-like sharpness. On the left its slope towards Zmutt was formidably steep; on the right it descended in abysmal precipices. The adventurers, however, preserved their coolness, and steadily made their way along this new kind of Mahomet's bridge. At the end of it ran a narrow cleft. This was crossed, and the ascent of the rocks on the other side begun. In Professor Tyndall's own words:—"Our ascent was oblique, bearing to the right. The obliquity at one place fell to horizontality, and we had to work on the level round a difficult protuberance of rock. We cleared the difficulty without haste, and then rose straight against the precipice. Above us a rope hung down the cliff, left there by Maguignaz on the occasion of his first ascent. We reached the end of this rope, and some time was lost by my guide in assuring himself that it was not too much frayed by friction. Care in testing it was doubly necessary, for the rocks, bad in themselves, were here crusted with ice. The rope was in some places a mere hempen cord surrounded by a casing of ice, over which

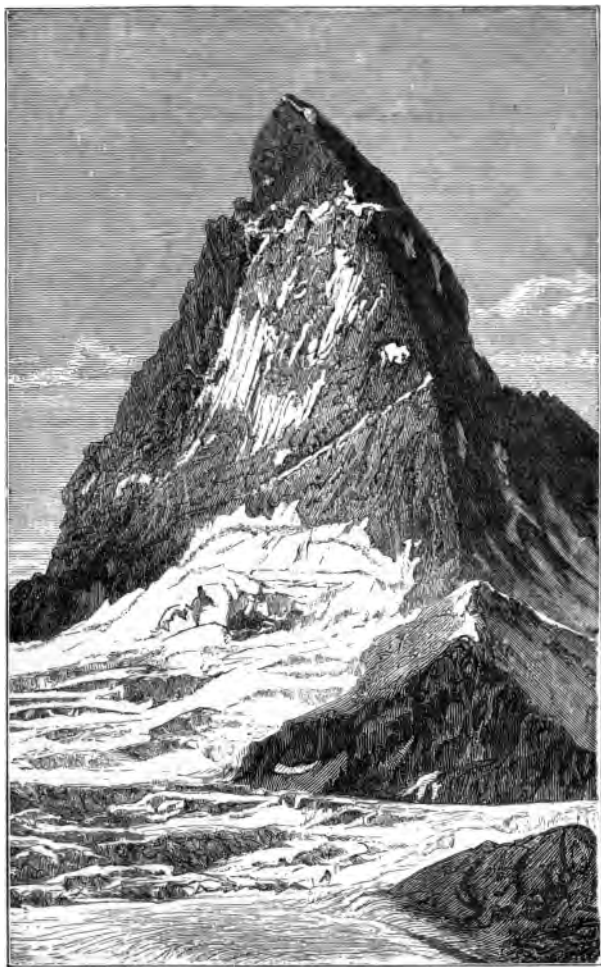
the hands slid helplessly. Even with the aid of the rope in this condition, it required an effort to get to the top of the precipice, and we willingly halted there to take a minute's breath. The ascent was virtually accomplished, and a few minutes more of rapid climbing placed us on the lightning-smitten top. Thus ended the long contest between me and the Matterhorn.

"The day thus far had swung through alternations of fog and sunshine. While we were on the ridge below, the air at times was blank and chill with mist; then with rapid solution the cloud would vanish, and open up the abysses right and left of us. On our attaining the summit a fog from Italy rolled over us, and for some minutes we were clasped by a cold and clammy atmosphere. But this passed rapidly away, leaving above us a blue heaven, and far below us the sunny meadows of Zermatt. The mountains were almost wholly unclouded, and such clouds as lingered amongst them only added to their magnificence. The Dent d'Erin, the Dent Blanche, the Gabelhorn, the Mischabel, the range of heights between it and Monte Rosa, the Lyskamm, and the Breithorn, were all at hand, and clear; while the Weisshorn, noblest and most beautiful of all, shook out a banner towards the north, formed by

the humid southern air as it grazed the crest of the mountain."

After a brief examination of this wonderful world of mountains, Professor Tyndall proceeded in an easterly direction along the sharp horizontal *arête* which forms the summit. About half-past eleven he and his guides began the descent on the *other* side, towards Zermatt. The snow-slope, down which they cautiously made their way, fell towards the Zmutt glacier, and terminated in a plateau of snow. It was interrupted by rocky projections, of which the guides availed themselves to assist the descent. Round them an extra rope which they carried was frequently doubled, and the adventurers lowered themselves by it as far as they could, and then liberated the rope by a succession of jerks. When these ceased, they were compelled to trust to the slope, though it was in a sorry condition; the sun having loosened the upper layer of snow until it resembled so much sand or sawdust, and, being fifteen inches thick, greatly impeded travelling. Consequently, they progressed slowly, and with difficulty, at every step incurring danger. Had any one of the party given way, nothing could have saved his companions or himself from ruin.

"Standing on the *arête*, and permitting the vision to range over the Matterhorn, its appear-



THE MATTERHORN FROM ZERMATT.

ance is exceedingly wild and impressive. Hardly two things can be more different," says Tyndall, "than the two aspects of the mountain from above and below. Seen from the Riffel, or Zermatt, it presents itself as a compact pyramid, smooth and steep, and defiant of the weathering air. From above, it seems torn to pieces by the frosts of ages, while its vast facettes are so foreshortened as to stretch out into the distance like plains. But this underestimate of the steepness of the mountain is checked by the deportment of its stones. Their discharge along the side of the pyramid was incessant; and at any moment, by detaching a single boulder, we could let loose a cataract of them, which flew with wild rapidity and with a thunderous clatter down the mountain. We once wandered too far from the *arête*, and were warned back to it by a train of these missiles sweeping past us.

"As long as our planet," continues Tyndall, "yields less heat to space than she receives from the bodies of space, so long will the forms upon her surface undergo mutation; and as soon as equilibrium, in regard to heat, has been established, we shall have, as Thomson has pointed out, not peace, but death. Life is the product and accompaniment of change; and the self-same power that tears the flanks of the hills to pieces

is the mainspring of the animal and vegetable worlds. Still, there is something chilling in the contemplation of the irresistible and remorseless character of these infinitesimal forces, whose integration through the ages pulls down even the Matterhorn. Hacked and hurt by Time, the aspect of the mountain from its higher crags saddened me. Hitherto the impression that it made was that of savage strength, but here we had inexorable decay."

Having concluded his philosophical reflections, Tyndall and his guides cleared the snowy plateau, and rapidly descended the rocks. It was towards evening when they reached the cabin, and between it and the base of the pyramid they missed their way. When they recovered it, evening had gathered her veil over the sky, and by the time they arrived at the so-called Hörnli ridge they could not distinguish rock from ice. Leaving it to the right, they plunged into a maze of precipices and ledges, which the darkness rendered doubly difficult. But they were veteran mountaineers, and their skill and resolution carried them over every obstacle. Entering the woods of Zmutt, they forced their way through bush and bramble, and crept along the course of dried-up streams, until they reached the direct route to Zermatt; where they arrived between

one and two in the morning, having successfully accomplished the passage of the Matterhorn.

Zermatt, we may add, is, like Chamounix, a great centre for tourists, travellers, and artists.



VILLAGE OF ZERMATT.

It is a secluded village, of between five hundred and six hundred inhabitants, situated in a green plain, 5315 feet above the sea, with a couple of good inns, and seventy to eighty quaint old

black-timbered houses. Three valleys start from its plain to penetrate the mountain masses above, and each valley is headed by a glacier,—that on the east being known as the Findelen Glacier; that on the south as the Zermatt or Görner Glacier; and that on the west as the Zmutt Glacier. The grandeur of the surrounding scenery may best be realized by the traveller who ascends the Görner Grut;* for it commands by far the finest view of the Monte Rosa chain and glacier, which here present an almost unbroken field of snow and ice.

Monte Rosa is composed of a range of five peaks running north and south, and extending over a length of two miles. These peaks are respectively named the Nord End, 15,132 feet; Höchste Spitzte, 15,217 feet; Zurnstein Spitzte, 15,004 feet; Signal Kuppe, 14,964 feet; and Parrot Spitzte, 14,577 feet. The Parrot Spitzte, we believe, has never been ascended; but the Zurnstein is named after a successful explorer; the Nord End was scaled by Mr. E. Buxton, in 1861; and the Höchste Spitzte has been vanquished by the brothers Schlagintweit, by Messrs. E. G. and C. Smyth, and by Mr. E. S. Kennedy,—these attaining to a point within eighteen feet

* One of the summits of a rocky ridge, the Riffelberg, which rises between the Görner and Findelen Glaciers.



GLACIER OF ZERMATT.

of the top; and in 1855 by Messrs. Hudson, Smyth, Birkbeck, and Stevenson, who reached

Dufour.

Lyskamm.

Jumeaux.

Breithorn.



Matterhorn.

Dent Blanche.

Weisshorn



PANORAMA OF THE MONTE ROSA CHAIN.

the crowning summit. Mr. Hincheliff and others have since been equally successful.

The view from the Görner Grut,* according to the author of "A Lady's Tour round Monte

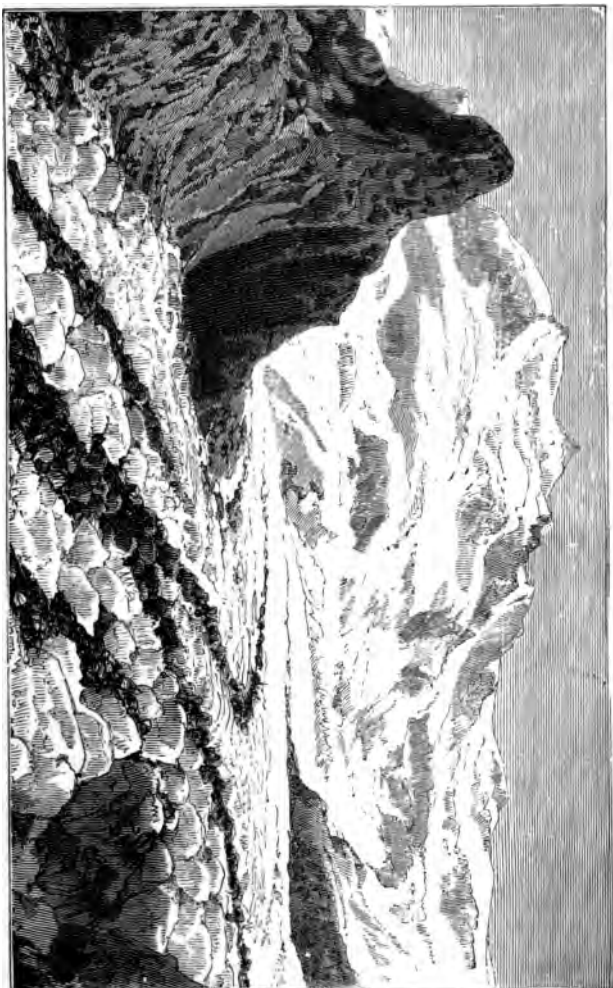
* "A lofty ridge which penetrates," says Mr. Wills, "into the very heart of Monte Rosa, and from which the spectator gazes upon a range of glacier, precipice, and crag, the most gigantic and the most striking among the Alps."

Rosa," is one of wonderful extent and sublimity. Surveying the mountains as they appear in succession in the splendid panorama, she names them in the following order: Monte Rosa, Lyskamm, Les Jumeaux (The Twins), the Breithorn, Petit Mont Cervin, the St. Théodule Pass and Horn, the Matterhorn, Tête Blanche, Dent Blanche, Gabel Horn, Triften Horn, Rothhorn, Weisshorn, the Bernese Alps, Bletschhorn, Breithorn, Blumlis Alp, Mischabelhörner, the Dom or Alphubel, Rympfischhorn, Strahlhorn, Stockhorn, and the Cima de Jazzi.

Peak after peak in marvellous glory rise
With crests of snow against the deep blue skies;
All silent stand, save when the storm awakes,
And down their flanks the thund'ring avalanche
breaks:
All silent stand; the guardians of the scene,
In voiceless might, in majesty serene,
As if to witness through each awful hour
To the sublime tranquillity of Power!

The Matterhorn is associated with one of the most painful catastrophes recorded in the annals of Alpine adventure.

Its ascent was attempted in July 1865 by Mr. E. Whymper (who has attained a twofold reputation as artist and traveller) and Lord



MONTE ROSA AND ITS GLACIER

Francis Douglas, accompanied by three guides—one from Chamounix and two from Zermatt. The party was afterwards increased at Zermatt by the junction of the Rev. Charles Hudson and Mr. Hadow. Before agreeing to accept the latter's companionship, Mr. Whymper made inquiries as to his capabilities and experience; and was informed that he had ascended to the summit of Mont Blanc in less time than is occupied by the majority of tourists, that he had distinguished himself in several analogous expeditions, and, in Mr. Hudson's opinion, was quite capable of sharing in the hazardous enterprise of attacking the Matterhorn.

This being settled, the adventurers proceeded in search of guides; and all the necessary preparations being completed, the little company, provisioned for three days, set out from Zermatt, at half-past five in the morning of Thursday, the 13th of July. Thence they proceeded to a small chapel near the Black Lake, where Mr. Whymper had previously deposited his tent, ropes, and other articles. Mr. Hudson was provided with a rope of iron wire of his own invention, on which he set great value; but with this fact Mr. Whymper was unacquainted. It was never brought into use, and the whole party seem to

have trusted entirely to the stout ordinary rope which Mr. Whymper and Lord Francis Douglas had secured. It consisted of 200 feet of the rope patronized by the Alpine Club; of 150 feet of another kind, which Mr. Whymper regarded as even stronger; and, finally, of 200 feet of a somewhat inferior quality.

They quitted the village with the intention of resolutely attacking the mountain and storming its summit; and they were abundantly provided with everything that Mr. Whymper's long experience had suggested as necessary or desirable. However, they did not propose to ascend to any considerable elevation on the first day, but to halt as soon as they came upon a favourable site for the erection of their tent.

Their progress, therefore, was slow and well-considered; they knew the dangers of their enterprise, and did not desire to increase them by careless haste or rash presumption. At eight o'clock they passed the Black Lake, and followed the ridge which connects the Hörnli with the true Matterhorn. Before noon the tent was pitched, at an elevation of 11,000 feet above the sea; but Michel Croz and one of the younger Tauggwalds, who had been engaged as guides, pushed forward in the quality of scouts, so as to prevent any loss of time on the following day.

After a while they returned with the welcome information that they had encountered no insurmountable difficulties, and that, if the travellers had accompanied them, they might have clomb to the very summit, and returned to the tent before nightfall. The rest of the day was spent in enjoying the prospect, in basking in the sunshine, and in conversation. The sunset was magnificent, and signs of fair weather were abundant.

As the shades of evening fell over the glorious scene, Mr. Hudson prepared tea; Mr. Whympers boiled some coffee; and then each person wrapped himself in the bag or sack which serves instead of bed or couch in Alpine excursions. The guides Tauggwald, Lord Francis Douglas, and Mr. Whympers occupied the tent; the rest of the party preferred to sleep *sub Jove*. Night was far advanced before the mountain-echoes ceased to resound with their merry shouts and the simple songs of the guides. All were happy and well satisfied, and no shadow of peril overclouded the prospect.

Before morning they were on the march; and the youngest of the Tauggwalds took leave of them. At six o'clock they had gained a height of 12,800 feet. Here they halted for an hour and a half; then the ascent was resumed, and continued without interruption until ten o'clock.

At an altitude of 14,000 feet they made a second halt. Up to this point they had scaled the mountain on its northern side, and without making use of the rope.

Sometimes Whymper led the way ; sometimes Hudson. They had reached that pyramidal portion of the peak which, when viewed from Zermatt, seems perpendicular and absolutely impracticable. By general agreement, they ascended for a time by the *arête*, one extremity of which is directed towards the village of Zermatt. Then they were compelled to turn to the right—that is, to the north-west ; and at this point they changed their order of march. Croz took the lead ; Whymper followed ; Hudson was third. Then came, in due succession, Hadow, Douglas, Tauggwald, and his son. The greatest prudence and steadiness were indispensable. At some points there was positively nothing to afford a holdfast, or a resting-place for the foot. The hollows and fissures of the rock were incrustated with a hard, compact, and congealed snow ; the rock itself with a thin sheet of ice. Still, the route was by no means impracticable to an experienced mountaineer.

About this time, however, it became apparent that Mr. Hadow had overrated his powers, and had attempted an enterprise altogether beyond

his strength. Every moment, one or other of the party had to proceed to his assistance. Still, there was no thought of leaving him behind ; and, indeed, his difficulty in advancing was not, after all, so much connected with physical weakness or fatigue, as with want of due experience. The poet, according to the old Latin adage, is born, not made ; but Horace would have owned that the reverse is the case with the mountain-climber. Of course, a certain amount of strength and energy is requisite, but the primary condition is experience ; and a veteran mountaineer knows how to make the most of his resources, how to utilize every opportunity, and in this way will accomplish the boldest enterprises with less means than many vainly exhaust in comparatively easy tasks. Nerve and tact and presence of mind are as much more precious than merely bodily qualifications on the mountain-heights as in the ordinary places and circumstances of daily life.

Mr. Hudson accomplished the entire ascent without once requiring or soliciting aid. As for Mr. Whympers, he had passed successfully through a varied training ; and we do not find that Lord Francis Douglas showed any signs of weakness or weariness.

The difficult portion of their work, however, was not of long duration. The space traversed

did not exceed 300 feet in height; at its extremity, the inclination gradually diminished; and, in order to reach the topmost peak, Whymper and Croz parted from the procession, and started forward to the summit with a run. It was forty minutes past one when they reached it; ten minutes later they were joined by their companions.

In view of the catastrophe that afterwards occurred, it seems desirable to repeat Mr. Whymper's emphatic assertion, that when he and his friends had gained the lofty crown of the Matterhorn no one of them exhibited the slightest fatigue. They had spent ten hours in accomplishing their object, and their progress had always been deliberate and cautious.

They halted on the summit for fully an hour. Mr. Whymper availed himself of the interval to discuss with Mr. Hudson the arrangements of the descent; and it was agreed that Croz, as the strongest of the party, should lead the van. Hadow followed him. Hudson, whose sure-footedness rendered him as useful and trustworthy as a guide, was to be the third. Next came Lord Francis Douglas; and behind him the senior Tauggwald. Whymper suggested to Hudson the expedient of attaching a rope to the rock when the party reached the difficult pass, so that they

might grasp it with both hands, and thus secure a sufficient stay or support. The idea was approved, but the party did not positively decide to carry it out. And now, while Whymper completed a sketch of the summit, the adventurers proceeded to rope themselves to one another after the approved fashion of Alpine travellers. They waited for Whymper. He contented himself with fastening round his body the rope which the younger Tauggwald held ; and they were on the point of departure when some one remarked that they had not left their names in a bottle as a memorial of their visit.

Whymper was requested to draw up the necessary record ; and while he was thus engaged the march began. A few minutes afterwards he rejoined them. They had already reached the most difficult part of the journey. Wary was their tread, and slow ; everybody watched each step, each movement, with special caution. Only one man moved at a time ; and as soon as he had planted himself firmly, the next person followed in silence. The average interval between them was not more than twenty feet. They had not, however, fastened to the rock the supplementary rope suggested by Whymper ; no one spoke of it, and probably no one recollected it.

As we have recorded, Whymper was separated

from the others, and followed in their track ; but at the end of a quarter of an hour's march, Lord Francis Douglas begged him to attach himself to the senior Tauggwald, fearing, he said, that if he should happen to slip, the latter would not be sufficient to check his fall. Mr. Whymper complied immediately. This took place about ten minutes before the catastrophe ; and to this precaution, taken on behalf of another, Tauggwald owed his life.

At the moment of the accident all were standing still,—at least, such was Mr. Whymper's impression ; but he could not speak with certainty, any more than the two Tauggwalds, because the two foremost travellers were partially hidden by a shoulder of the rock. Croz had thrown away his hatchet ; and to encourage and reassure Hadow, he took him by the legs, and placed his feet, one after another, in the positions they ought to occupy. To judge from the movement of their shoulders, Mr. Whymper thought that Croz had turned round to descend a step or two lower : at the same moment Mr. Hadow tripped, and then fell forward upon the guide.

Croz uttered a cry as, with the rapidity of an arrow, he slid downward, followed by Hadow ; a second, and Hudson was jerked from his place, and Lord Douglas with him. It was the affair

of a couple of seconds. Simultaneously with the exclamation of Croz, Whympier and Tauggwald threw themselves back a step or two, and took up as firm a position as the frightful precipitousness of the rock permitted.

The rope which bound the party together was instantaneously drawn tight, and the shock thrilled through every individual. Whympier and Tauggwald maintained their footing; but midway between the latter and Douglas the rope snapped! For two or three seconds—not more—Whympier and the guide saw their unfortunate companions, on their backs, with hands outstretched, glide down the fearful steep; then, one after the other, they disappeared, and fell from rock to rock and crag to crag upon the glacier, 4000 feet beneath!

For half an hour the survivors stood rooted to the spot with dread. Paralyzed by terror, the two Tauggwalds wept like children, and trembled like aspen-leaves. Cautiously descending a few steps, Whympier asked to look at the broken rope; and, to his consternation, discovered it was the weakest of the three. As his companions had gone through the operation of fastening themselves to one another while he was sketching, he had not observed which rope they had taken. It

has since been asserted that the rope gave way through its friction against the rock ; but Mr. Whymper declares that such was not the case.

He adds :—" During the next two hours, every moment seemed to me the last of my existence. The Tauggwalds were completely prostrated, and incapable of rendering me any help ; they tottered at every step. I ought to add, that as soon as we had arrived at an easier part of the descent the young man began to eat and smoke, as if nothing terrible had occurred. I have nothing more to say of the descent."

Incessantly but vainly Whymper halted to discover any traces of the passage of his unfortunate companions. Night overtook them when they were still at an elevation of 13,000 feet ; but they entered Zermatt in safety at half-past ten o'clock on Saturday morning.

Immediately on Whymper's arrival, he requested the *maire* to send as many people as possible to the heights overhanging the place where he felt certain his friends had fallen. Several set out, and returned at the end of six hours : they had seen the bodies, but could not get at them that day. On the morrow, accompanied by Whymper, they again set out, following up the route of the travellers when they ascended the mountain.

From the Hörnli they descended on the right of the *arête* ; and having scaled the moraines of the Matterhorn glacier, reached the plateau which terminates it, in sight of the angle where it was known the dead bodies lay.

When, says Whympers, we saw each of our guides, with pale countenance, point the telescope in succession towards a certain point, and then hand it silently to his neighbour, we knew there was no hope. We drew near. The unfortunates lay in the order they had observed on the peak—Croz a little in front, Hadow near him, and Hudson at some distance in the rear : as for Lord Francis Douglas, it was impossible to discover him.

By order of the State Council of Valais, four days after the event twenty-one guides were despatched to recover and bring back to the village the dead bodies of our friends. These brave men accomplished their dangerous task with an intrepidity that did them honour. They saw no trace of Lord Douglas's body ; which was probably arrested in its descent by some projecting rock.

III.

The Finsteraarhorn.*



ONE of the most remarkable and picturesque of the Alpine summits is the Finsteraarhorn, the loftiest of the mountains of Switzerland ; attaining an elevation of 14,039 feet above the sea. It forms a portion of the great mass or group which includes the Jungfrau, the Mönch, the great Eiger or Géant, and the Schreckhorn ; and the huge glaciers which descend these peaks, and fill up their interspaces, extend like a sea of ice from the Jungfrau to the Grimsel, and from Grindelwald, in Berne, to Viesch in the Valais.

The Finsteraarhorn was ascended by Professor Tyndall in 1858.

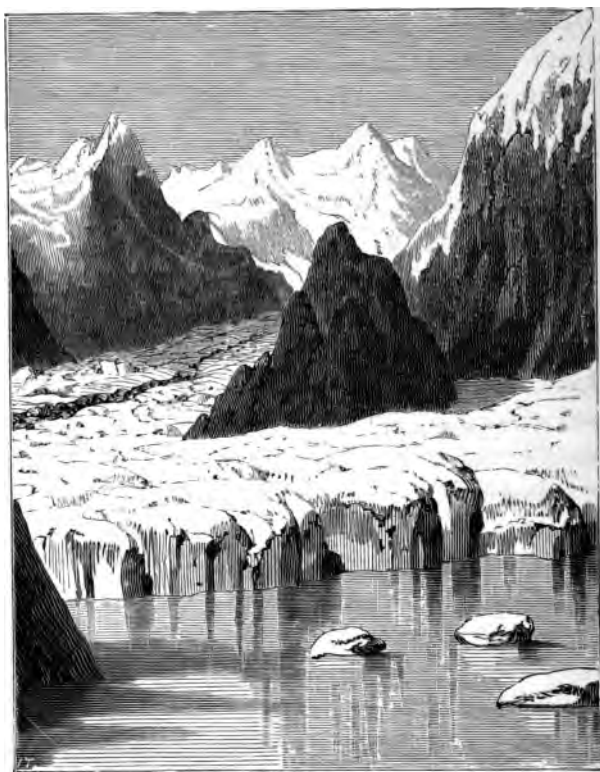
He started from the hotel of the Eggischhorn on the 2nd of August, accompanied by an ex-

* That is, the peak in which the Finster—(or dark)—Aar has its rise. The Matterhorn, we may add, is the peak of the meadow ; the Wetterhorn, the stormy peak ; the Schreckhorn, the peak of terror. Horn, Hyrene (Old English), or Hoorn (Dutch), primarily signifies a horn-like projection, or a curved valley.

perienced guide, named Bennen, and two porters, who were to carry as far as the grotto of the Faulberg a supply of coverlets, provisions, and fuel. His object was to carry out a series of observations on the mountain-summit, for the purpose of resolving some scientific questions.

It was three o'clock in the afternoon when Tyndall and his followers began to ascend the slope of the Eggischhorn (9656 feet); a mountain which deflects the flow of the great Aletsch glacier, and turns it aside into the deep ravine that gives birth to the torrent of the Massa.* Their upward progress was enlivened for a while by glimpses of the loftiest summit of the Finsteraarhorn, with the Rothhorn close beside it, and not far distant the Oberaarhorn, from which descends the Viesch glacier. High above the buttress of the mountain appeared the snowy crest of the Weisshorn, with the terrible and solitary Wetterhorn on its left, as well as the mighty Mischabel, crowned by its numerous peaks of snow, and flinging an elongated shadow over the landscape. After crossing the foamy torrent which issues from the Märjelen Sea, the travellers kept along the margin of that singular mountain-lake. On its clear cold surface the blocks that fall from the surrounding ice-cliffs float like miniature bergs.

* This glacier rises on the Mönch, and is fully twenty miles in length.



THE MÄRJELEN SEA.

At the commencement of their march upon the ice, Tyndall records that he noticed the vigilance with which Bennen watched him each time they crossed a crevasse ; until, growing confident in the resources and resolution of his fellow-traveller,

the guide felt able to relax his anxious observation. During the ascent the setting sun was veiled by heavy clouds, though at some distance from their congregated vapours an outburst of light was rich in a display of colours as intense and as varied as those of the spectrum. This splendid apparition was hailed by Tyndall as a hopeful augury, which dissipated the fears provoked by the dense mass of clouds.

In a couple of hours they reached their intended halting-place. The porters had preceded them, and in a cavern formed by the fissures of the mountain had kindled a noble fire of pine-wood, which threw its red glare on the surrounding objects, but only partially illuminated the obscurity of the further recesses of the grotto. Tyndall scaled the rock above it, to obtain a view of the overarching heavens. The sun, which had already sunk below the horizon, was still tinging the clouds with gleams of purple, and one snowy peak there was which retained its lingering fires. During the upward march of the travellers, the Jungfrau had never once shown its summit; and even now it was visible only in part; while the other peaks, entirely exposed, carved their sharp clear outlines on the background of the blue sky. The calm was unbroken; the deep and solemn silence was undisturbed by cry, or breath, or

murmur. If the Beautiful is worthy of worship, these glorious mountains, robed in snow and crowned with stars, are well adapted to awaken in the soul an emotion of adoration. Mr. Ruskin, in one of the finest passages of his "Modern Painters," alludes to their power of exciting the poetical and inventive faculties, in peculiarly solemn tones of mind. But their influence in this way is somewhat dubious; if they promote the religious feeling, they also deepen the superstitious sentiment. Human fable mingles with the creed, and the prayer of the devout soul is darkened by the vision of the disordered fancy. Nowhere is legend more rife than in mountain-countries; every peak has its traditions, every cave is peopled with strange beings.

Possibly, however, we shall do well to regard the superstitions of the hills as "a form of poetry," while we regret that men have been unable to distinguish poetry from "well-founded faith." Whether it be poetry or religion, certain it is that the great snowy summits of the Alps awaken in the heart a feeling which it has never before felt, and fill the mind with thoughts to which it has hitherto been a stranger.

Tyndall and his guide resumed their enterprise at three o'clock in the morning, and by a some-

what precipitous track descended upon the glacier. They shortened the route considerably by crossing a spur of the Faulberg, and soon found themselves on the tributary glacier of Grünhorn, which joins the main stream at a right angle. The moon shone brightly in a cloudless sky, and the Jungfrau revealed itself in so much purity and beauty that the thought of a pilgrimage to "the Virgin" suddenly presented itself to Professor Tyndall's mind. "Let us attempt," he said to Bennen, "the ascent of the Jungfrau." He thought the idea would be pleasing to his guide. Probably it was so; but he took the precaution of divesting himself of all responsibility. "I am ready, sir, if *you* desire it." They directed their course towards the mountain; but on calmer consideration Professor Tyndall abandoned the impulse. They neither knew exactly the condition of the snows, nor were they provided with the ladders indispensable for making the first approaches; and, finally, the Finsteraarhorn, which is much loftier than the Jungfrau, was better adapted for the professor's intended experiments.

Morning dawned. The east was all ablaze, and crowned the mountains with great red flames. On the side of the main glacier their route ran through a valley terminated by the Col de Lötsch.

The loftiest mountains of the Oberland formed its sides; though the impression produced was rather that of an indescribable grace than of grandeur and sublimity. As yet the sun had not kindled their snows, but in the depth of the valley the sky glowed with the richest colours. Through graduated tints of deep orange, the amber yellow and the pale green merged into the ethereal blue of the firmament. Immediately above the curving lines of the snowy amphitheatre hovered vast clouds of purple, communicating a greater profundity to the intermediate spaces. A certain air of sanctity prevailed in this scene of enchanted beauty.

On arriving at the ridge, Tyndall cast a last look at the immense valley beneath him, and the marvellous colour-fantasies of the heavens. The sun was already illuminating the snows of the Aletschhorn, and with its rays seemed to inspire the mountains and the glaciers with a principle of life and activity: the glorious light constantly increased in splendour, and the motionless clouds, floating around the peaks, carried the spectator's thoughts towards those religions of the East which arrest all action, to substitute for it an eternal tranquillity.

The Finsteraarhorn now rose before them, but clouds surrounded the giant's head, and concealed

it from the curious gaze. The travellers, finding that the wind had settled in the north, conceived good hopes that they would be driven afar in the course of the day. Across a fine plain or field of snow they marched with step alert, and reached the base of the colossal peak at six o'clock. There they halted ; partly for the sake of a brief rest, and partly in order to disencumber themselves of the articles they carried.

The wind had freshened ; and now that they had passed out of the sunlight they felt the cold keenly. Depositing in their knapsack a bottle of tea and some provisions, and filling their pockets with figs and dried plums, they began the ascent.

From the Finsteraarhorn descend several very steep spurs or buttresses, separated from one another by vast hollows, filled with ice and snow. One of these buttresses they selected for the assault, and cautiously climbed its declivities in the midst of sharp rugged rocks. After this painful experience they once more got upon the snow, and, quitting the rock, gladly trusted themselves to the very abrupt masses of *névé* in the ravine. On a narrow ledge Tyndall found a sufficient support for measuring the inclination. The slope formed an angle of 45° with the horizon, or one-

eighth of a circle. On the other side, at a short distance, yawned a deep fissure.

The sun now brightened the summits which hitherto had been concealed; and such was the intensity of his rays, that the travellers were compelled to don their veils and their colour-spectacles. Two years before, Bennen had nearly lost his sight through an inflammation caused by the reverberation of the snow, and since that mishap he had been exceedingly careful with his eyes. The rocks appearing more practicable, the travellers returned thither; but after a brief attempt found themselves in front of a completely inaccessible wall. Bennen examined it carefully, and as a result of his examination descended towards the slanting snow at its base. The way seemed unsafe to his companion, but he followed without hesitation, treading carefully in the guide's footsteps.

After again remounting on the rocks, they passed into the left-hand ravine, where the slope of snow was much dislocated in its lower portion, so that they were compelled to cross crevasses and climb precipices. The snow was smooth, and so firm that the travellers had to cut out resting-places for their feet. Bennen led the way; in digging each step, he gave a blow with his pick-axe, raising the foot which was behind exactly at

the moment that his implement descended, with a kind of rhythmical cadence. In this manner they arrived at the foot of the great pyramid with which the mountain terminates.

One of the sides of this pyramid having fallen away, a precipitous wall of some thousands of feet descended to the Finsteraarhorn glacier. A rampart of rocks extended the length of the mountain and sheltered the explorers from the north wind, which beat against the outside of this formidable barrier with a roar like that of the waves of ocean. "Now," said the guide, "now comes the hardest part of our task." And, in truth, their advance had to be made across abrupt and broken rocks, amongst which they carefully chose the projecting points that seemed sufficiently solid to support the weight of their body. It was each one for himself, and neither could Bennen assist Tyndall, nor Tyndall lend any help to Bennen. Tyndall's apparatus for boiling water, slung across his back along with his telescope, fatigued and harassed him greatly; it was heavy, and it swung to and fro in a very embarrassing fashion as he leapt from rock to rock. Bennen repeatedly offered to take charge of it; but as he had already a heavy burden, Tyndall was resolved not to add to it. Very frequently the rocks were replaced by steepes of

ice and snow, which the adventurers traversed with considerable alacrity; but when these acquired too precipitous a character, they had no resource but to retire to the more elevated points of the ridge. The wall, or rampart, to which we have referred, was in several places interrupted by wide gaps, through which the wind penetrated with a doleful groaning sound. These intervals enabled Tyndall to survey the vast theatre of the observations made by Agassiz, the junction of the Lauteraar and Finsteraar glaciers at the *Abschwung*,* as well as the medial moraine on which are planted the *Hôtel des Neuchatelois*,† and the Pavilion raised by M. Dollfus-Ausset,—which had afforded shelter to Tyndall and Professor Huxley just two years previously. Bennen, who was impatient to reach the summit, advised his companion to postpone his observations until success was assured. Tyndall willingly consented, and thenceforward followed closely in the guide's steps. Though a man of great physical energy, he halted from time to time, rested his head on his pickaxe, and panted like a kid pursued by the hunter. He complained of a burning thirst, and to appease it the travellers had only

* A steep promontory of rock which separates the Lauteraar glacier from the Finsteraar.

† A hut erected by M. Agassiz and some men of science, in 1840, for the purpose of studying glacier movements. The Pavilion is a more substantial building, on the left bank of the glacier.

Tyndall's one bottle of tea: this was honestly shared between the thirsty couple, and extorted a warm panegyric on its qualities from the guide.

As is the case in ascending mountains, the summit appeared always above them, and to rise as they rose. The north wind, increasing in severity, beat violently against its rugged battlements. They redoubled their efforts; and at length, gaining the extremity of a rock, Bennen cried with a triumphant voice, "The loftiest point!" A moment afterwards, the two travellers reached it in company, and stood erect on that grand natural pinnacle, with the blue arch of the heavens above them, and a world of peaks, clouds, and glaciers at their feet.

The Alpine guides very generally cherish a belief that if you fall asleep on the high mountains you will sleep the sleep which knows no waking. Bennen did not appear to share this superstition, and Tyndall had stipulated with him that he should be allowed a few minutes' slumber after arriving at the summit, as a compensation for the loss of the rest of the night. "My first act," says Tyndall, "after bestowing a glance at the magnificent panorama, was to profit by this agreement. After a brief interval of repose, I woke refreshed, and perfectly alert." As the sun was shining with full splendour, he

exposed his thermometer to its rays; but some light clouds of vapour rapidly rose before it, and the densest mists extended over the valley of the Rhone. As there was no possibility of accurate observations being made, Tyndall was content to make ready his boiling apparatus, which gave him $86^{\circ}.1$ C. as the result. In a sheltered nook he placed a minimum thermometer, in the hope that it would indicate, in future years, the lowest temperature attained in winter on the summit of the Finsteraarhorn. It was recovered in 1859, and its index marked 32° C.

It is difficult to describe the magnificent prospect which the spectator commands from the crest of the Finsteraarhorn. We may enumerate, it is true, all the visible peaks, indicating their height and their distances, and leaving to the reader's imagination the task of bristling them with precipices, with breadths of frozen snow, or with broken and gloomy glaciers, and of wreathing with clouds their loftiest summits; but the imagination, when it has accomplished its utmost, will fall far short of the glorious reality, and omit a thousand details which contribute to the grandeur of the scene.

Let the reader picture to himself the varied forms of the mountains, sublime or graceful, bathed in golden light or darkened with the

shadow of the clouds, the peaks of spotless whiteness, the ledges, the domes, the amphitheatres; the blue fissures of the ice; the stratified snows; the glaciers descending from the eternal snows and winding through the valleys; the undulated and shining surface of the lower clouds, through which the gloomy hills pierce here and there, like volcanic isles above the sea. Let him add to the impressions produced by such a picture the consciousness of a perilous position at an elevation of 14,000 feet above the sea, whose distant voice the wailing wind recalls,—and then he will understand how every particular contributed to render the scene worthy of the Finsteraarhorn, the monarch of the Bernese Alps.

At length Bennen announced that it was time to depart. They divided their baggage, as before, and then proceeded to bind themselves together with a stout rope, after the usual fashion of Alpine climbers. "Now," said Bennen, "have no fear; however fast you go, I shall hold you back." At a later period, and on another Alpine summit, Tyndall repeated this speech to a guide not less vigorous than Bennen; who observed that the latter had spoken too rashly, and that in the most difficult passages he could not have fulfilled his promise. But a courageous word

strengthens the heart ; and though the professor was not at all likely to experience the sentiment against which Bennen exhorted him, and was resolved to afford him, if possible, no occasion to test his energies, he appreciated his gallant language, and followed him cheerfully. Their descent was rapid, and, to all appearance, careless, among isolated projections, scattered blocks, and vertical prisms of rocks, where the slightest false step would assuredly have been attended by serious consequences.

Quitting at last the rocky ridge, they once more trod the plain of snow. The sun had melted the frozen crust which in the morning they had been compelled to notch and gash, and at every step their feet sank deeply ; but these falls following always the slope of the mountain, they made rapid progress. Sometimes the crust was so hard that they were able to glide along it while preserving an erect position. In one of these "glissades" Bennen tripped and fell, dragging Tyndall down with him ; the latter faced about, and, with rare presence of mind, thrusting the point of his axe into the ice, contrived to balance himself. For a considerable space the adventurous couple slid downwards on their backs ! Arriving rapidly, but not without caution, in the region of the crevasses, they

halted at the spot where they had deposited their bottle of wine ; and after shaking the snow from their clothes, dried them in the sun.

As some articles had been left in the Faulberg Cave, Bennen intended to pass that way in order to recover them. But Tyndall preferred to return to the Eggischhorn, by traversing the Viesch glacier. Although this glacier presented numerous fissures, mostly covered with snow, they unfastened the rope, and Bennen was content with recommending Tyndall to follow him closely. Three or four times he half-disappeared, but recovered himself promptly. Once Tyndall also fell in, and the noise made by the fragments of ice in falling some fifteen feet under him, was a warning that he had come upon the opening of a crevasse. Bennen turned round rapidly while our philosopher was effecting his deliverance, and a shade of anxiety, for the only time throughout the adventure, crossed his countenance. "Certainly," he exclaimed, "you have not followed my footsteps."

Bennen seldom tested the ice on which he walked ; in most cases, the experienced eye can determine its condition by its form and colour. For a long time they took their way to the right of the glacier, avoiding the fissures constantly discovered in that region. They were guided by

the traces of a herd of chamois, which, according to the guide, had clambered from the glacier to the slopes of the Oberaarhorn, and afterwards traversed the glacier on the right.


On their route they met with several very deep crevasses, and Tyndall had frequent occasion to admire the skill of his guide. Sometimes he led the way along the middle of the glacier, and sometimes on the moraine, or along the flanks of the mountain. Towards the close of day they had to cross the ruins of a great avalanche. After having quitted the ice, an hour's good walking took them to the Eggischhorn Hotel; and thus ended the professor's successful excursion to the summit of the Finsteraarhorn.

This mountain, we may add, was first ascended, in 1841, by Herr Solger, of Basle; and again, in 1857, by the Rev. J. F. Hardy, and Messrs. Kennedy, Ellis, St. John Mathews, and W. Mathews.

IV.

Ascent of the Jungfrau.

I.

N the 6th of August 1863, Professor Tyndall accomplished the ascent of the Jungfrau, accompanied by Dr. Hornby and Mr. Philpotts, with Christian Almer and Christian Lauener as guides.

They quitted the Eggischhorn at 2.15 P.M., and in less than four hours gained the well-known grottoes of the Faulberg. A blazing, odorous fire of pine-wood was soon kindled; a pan of water "bubbled socially" over the flame; and the evening meal was quickly prepared and quickly enjoyed. For a while the sky behind the Jungfrau and the Monch presented a dark and menacing aspect; showers of rain descended in mist upon Lauterbrunnen, and wreathed their clouds around the mountain-peaks. Southward, however, the air was clear; and evidences of hope

were numerous enough to encourage the three English travellers. Like a momentary mood of depression, the clouds passed away, and all was sensibly clear before they retired to rest. The air, however, was not transparent, and it was but a feeble ray which each struggling star could thrust through the gloom. There was no "visible turbidity," but a certain obscurity diminished one half of the stellar radiance. Gradually, however, as the night wore apace, and the air recovered its transparency, the starlight recovered its normal strength.

Two of the travellers occupied the upper cave; the other lay in the little grot underneath; while the kitchen was abandoned to the guides. "Hips and ribs," we are told, "felt throughout the night the pressure of the subjacent rock. A single blanket, moreover, though sufficient to keep out the pain of cold, was insufficient to induce the comfort of warmth;" so at least one of the party, if not more, lay awake, in a neutral condition, neither happy nor unhappy, watching the stars as they rose successively above the mountain-heads.

About one o'clock the travellers arose, breakfasted on tea and a crust; and then, being properly equipped and harnessed, dropped down upon the glacier. The crescent moon rode cloudless in the sky, but as for a long time they pro-

ceeded in the shadow of the mountains, artificial illumination was needed. A couple of empty bottles, inverted, with their bottoms knocked out, formed a couple of excellent lanterns, when a candle had been stuck in the neck of each. Almer went first, with a lamp in his left hand and an axe in his right, and cautiously picked his steps along the snow which the spring avalanches had left as a fringe upon the borders of the glacier. At times, for no apparent reason, he paused and struck his ice-axe into the snow. If you looked to the right or left, on these occasions, you always discovered a chasm; and then you understood that the wary guide had sounded the snow lest the fissure should be prolonged underneath and cross the travellers' track. A tributary glacier joined the Aletsch from the right; "a long corridor filled with ice, and covered by the purest snow." Cold and clear, the moonlight poured down this enchanted valley, until it seemed to have been cut out of virgin silver by industrious gnomes.

Flinging aside the lanterns, and roping themselves together, the adventurers continued their march. Before them, on the left, opened another glacial corridor, stretching up to the Lötsch saddle, which hung like a chain between the opposing mountains. Thus they had reached the junction-

point of four rivers of ice, which thenceforward united in the single channel of the great Aletsch glacier. Up the glacier they bent their resolute steps, towards the *col*, or ridge, which connects the Mönch and the Jungfrau. They went in silence, for the impressiveness of such a scene prevails over the desire for conversation, and the mind falls back for companionship on the thoughts it suggests, the feelings it arouses. It is difficult to discourse commonplaces in the majestic presence of the mountains, when crowned with the silence of the night.

“Der Tag bricht!” exclaimed one of the guides; but though the travellers looked towards the eastern sky, they saw no sign of the coming day. At length the “rose of dawn” really appeared, flushing the deep blue eastern firmament, and gradually increasing in depth and warmth. By this time they had conquered the long declivity of the glacier, and had reached the first eminences of snow which roll billow-like around the base of the Jungfrau. This is the true region of beauty, says Professor Tyndall, in the higher Alps; beauty pure and tender, contrasting strangely with the rugged, solemn, severe scenery of the peaks. “For the healthy and the pure in heart, these higher snow-fields are consecrated ground.”

Here we take up Professor Tyndall's own words, which do full justice to their subject.*

[The snow bosses were soon broken by chasms deep and dark, which required tortuous winding on our part to get round them. Having surmounted a steep slope, we passed to some red and rotten rocks, which required care on the part of those in front to prevent the loose and slippery shingle from falling upon those behind. We gained the ridge and wound along it. High snow eminences now flanked us to the left, and along the slope over which we passed the *séracs* had shaken their frozen boulders. We tramped amid the knolls of the fallen avalanches towards a white wall, which, so far as we could see, barred further progress. To our right were noble chasms, blue and profound, torn into the heart of the *névé* by the slow but resistless drag of gravity on the descending snows. Meanwhile the dawn had brightened into perfect day, and over mountains and glaciers the gold and purple light of the eastern heaven was liberally poured. We had already caught sight of the peak of the Jungfrau, rising behind an eminence, and piercing for fifty feet or so the rosy dawn. And many another peak of stately altitude caught the blush, while

* "Hours of Exercise in the Alps," by J. Tyndall, pp. 186-188.



THE JUNGFRAU.

the shaded slopes were all of a beautiful azure, being illuminated by the firmament alone. A large segment of space enclosed between the Mönch and Trugberg

was filled like a reservoir with purple light. The world, in fact, seemed to worship, and the flush of adoration was on every mountain-head.

Over the distant Italian Alps rose clouds of the most fantastic forms, jutting forth into the heavens like enormous trees, thrusting out umbrageous branches, which bloomed and glistened in the solar rays. Along the whole southern heaven these fantastic masses were ranged close together, but still perfectly isolated, until, on reaching a certain altitude, they seemed to meet a region of wind which blew their tops like streamers far away through the air. Warmed and tinted by the morning sun, these unsubstantial masses rivalled in grandeur.

The final peak of the Jungfrau is now before us, and apparently so near! But the mountaineer alone knows how delusive the impression of nearness often is in the Alps. To reach the slope which led up to the peak, we must scale or round the barrier already spoken of. From the coping and the ledges of this beautiful wall hung long stalactites of ice : in some cases like inverted spears, with their sharp points free in air ; in other cases, the icicles which descended from the overhanging top reached a projecting lower ledge, and stretched like a crystal railing from one to the other. To the right of this barrier was a narrow

1

gangway, from which the snow had not yet broken away so as to form a vertical or overhanging wall. It was one of those accidents which the mountains seldom fail to furnish, and on the existence of which the success of the climber entirely depends. Up this steep and narrow gangway we cut our steps; and a few minutes placed us safely at the bottom of the final pyramid of the Jungfrau.]

From this point they saw beneath them the depths of the Roththal, where the wild and eery mists constantly accumulating about the dark, rugged precipices have begotten a strange legend of the "Lords of the Roththal." Here, it is said, the mountain-demons held high revel, in company with the twice-accursed spirits of evil men. It is suggested by Hugi that the fable may have been partly suggested by the electric phenomena which so frequently occurs at this elevation. The travellers then pressed forward up a steep southern slope, the snows of which had been melted by the sun, and again congealed into hard, solid ice. Almer, with laborious axe, dug out great dints, into which the ascensionists cautiously inserted their feet, and in this way conquered no inconsiderable obstacle. A single false step would have precipitated them into "unfathomed abysses."

After the ice was cleared, their progress over a

stretch of snow was very much quicker; and a short climb brought them to the top, where fluttered a small black flag, in memorial of a previous ascent. They reached the goal of their hopes and labours at 7.15 A.M., having accomplished the distance from the Faulberg in six hours. On either side of the apex the snow formed a convenient platform, wide enough to accommodate the whole party; and there they stood for some time, fascinated by the splendour of the Alpine picture on which they gazed.

There is something in mountain scenery—in the lofty peaks and the shadowy ravines and the abrupt precipices; in the light and glory which rest upon the heights, and the strange gloom and apparently haunted darkness which fill the mysterious depths—that exercises a special influence on the imagination and thoughts of men. All of us, however indifferent to the ordinary aspects of Nature, are silent among the mountains, and acknowledge a Presence and a Power which are not of the earth, earthy. As the rose of dawn kindles each soaring crest at the opening of the day, or the purple splendour touches them with an indescribable magnificence at the setting of the sun, it seems as if they revealed to us a sudden glimpse of the other world: the changing lights that fall upon them are surely the passing gleams

of angels' wings ; and the prophetic voices that linger among their echoes—what can they be but the distant harmonies of the seraphic host raising their song of gratitude and praise around the “great white throne”?

Professor Tyndall, speaking of the spectacle that is seen from the summit of the Jungfrau, observes that one may look again and again upon the Alpine peaks, from a dozen different points of view, and yet find them invested with a perennial glory which with each new prospect originates new impressions. He justly observes that half the interest of such scenes is psychological: the soul absorbs, so to speak, the sentiment and sympathy of the surrounding nature, and in its turn becomes majestic, rises to the height of great and lofty ideas.

“As I looked over this wondrous scene,” he writes, “towards Mont Blanc, the Grand Combin, the Dent Blanche, the Weisshorn, the Dom, and the thousand lesser peaks which seemed to join in celebration of the risen day, I asked myself, as on previous occasions: How was this colossal work performed? Who chiselled these mighty and picturesque masses out of a mere protuberance of the earth? And the answer was at hand. Ever young, ever mighty, with the vigour of a thousand worlds still within him, the real sculptor was even then climbing up the eastern sky. It was he who

raised aloft the waters which cut out these ravines; it was he who planted the glaciers on the mountain slopes, thus giving gravity a plough to open out the valleys; and it is he who, acting through the ages, will finally lay low these mighty monuments, rolling them gradually seaward—

‘Sowing the dust of continents to be,’

so that the people of an older earth may see mould spread and corn wave over the hidden rocks which at this moment bear the weight of the Jungfrau.”

It is possible that, to the question here proposed by Professor Tyndall, some physicists would give a different answer to that which he has so eloquently put forward, or would at least admit some other force besides the solar action as an agent in the creation and construction of the Alps. But enough for us to suggest that, in contemplating their mighty forms, the traveller should look beyond creation to the Creator; beyond the physical causes of which the human mind is able to take account, to the Great Final Cause which defies its scrutiny; beyond the “ever young and ever mighty sun”—whose course must one day be arrested, whose fires must one day be extinguished—to its Almighty Maker, the Eternal God, in whom all things live and move and have their being. Such, it seems to us, is the main

idea which the mountains, in their grand and awful solitude, suggest to the thoughtful observer; the idea of the heavenly Father, the Creator of worlds, the Source of all life and love. And we venture to think there is a true philosophy as well as noble poetry in the hymn which Coleridge composed at the foot of Mont Blanc: that, in very truth, the avalanche in its fall thunders the name of God; the glaciers, as they drag their frozen billows down the mountain-side, all echo that awful Name; the peaks, as they soar above the belt of clouds, do homage to its power.

“Stupendous Mountain! thou, -
That, as I raise my head—awhile bowed low
In adoration—upward from thy base
Slow travelling with dim eyes suffused with tears,
Solemnly seemest, like a vapoury cloud,
To rise before me,—rise! oh, ever rise!
Rise like a cloud of incense from the earth!
Thou kingly Spirit throned among the hills,
Thou dread ambassador from Earth to Heaven,
Great hierarch!—tell thou the silent sky,
And tell the stars, and tell yon rising sun,
Earth with her thousand voices praises GOD!”

II.

We shall supplement Professor Tyndall's narrative by an account of an ascent of the Jungfrau, accomplished in 1841, by Professor Edward Forbes, M. Louis Agassiz, and M. E. Desor. These well-known *savants* were accompanied by Messrs. Heat, Du Châtellier, and De Pary.

It was at four o'clock on the morning of the 27th of August 1841 that the party of enthusiasts—for such they were—started from the Grimsel (six thousand feet), and directed their steps towards the upper glacier of the Aar, which the colossal mass of the Zinkenstock separates from the lower glacier.

They reached the summit of the ascent which rises from the river-bank just as the first rays of the sun lighted every mountain-peak with sacrificial fire, while their base still remained folded in that crepuscular half-light half-gloom which follows the setting and precedes the rising of the orb of day. Among these countless summits, one there was which shone with a special brilliancy—and, indeed, seemed all aflame. Curious lips inquired of the guides, "What mountain is that?" The guides, whether in good faith, or whether with the view of encouraging the travellers, replied, "It is the Jungfrau!" Of course, everybody was electrified. They felt their courage increase, their vigour revive, their hopes grow stronger; and from that moment no one doubted of success.

In two hours they reached the extremity of the glacier of the Oberaar; and were astonished to see that this glacier, which the year before had remained stationary, was now sharing in the progressive movement peculiar to all the glaciers

of the Bernese Oberland. It had propelled its moraines considerably forward—notably its terminal moraine and its left lateral moraine; the latter, in encroaching on the side of the valley, had completely carried off the turf, which was laboured and turned over as if it had been furrowed by a ploughshare.



TERMINAL MORaine OF THE GLACIER OF THE OBERAAR.

During the ascent our *savants* made some interesting observations on the relation which the well-known *roches moutonnées* bear to the surface of the glacier. But this subject has been abundantly discussed by Forbes, Tyndall, and other authorities, to whose works it is sufficient to refer the reader. From the *col*, they descended upon

the plateau of snow which feeds the glacier of Viesch. This is a vast amphitheatre, upwards of half a league in diameter, bounded northward by the immense mass of the Finsteraarhorn, and surrounded by ten great peaks, which among the people of the Valais bear the name of Viescherhörner, and raise their loftiest summits to an elevation of not less than 13,281 feet. In the middle of this grand amphitheatre, the adventurers settled themselves to take their dinner; a truly frugal meal, but rendered delicious by that condiment so highly spoken of in the old proverb—hunger.

At length they descended the fields of ice which stretch southward towards the Valais. The snow was perfectly homogeneous, without any trace on its surface of disintegrated rocks or foreign substances. The crevasses had almost entirely disappeared, and those which were still perceptible stretched across the sides of the valley. They were marching forward in joyous security, when they observed at some distance from them several small openings. To ascertain their cause or meaning, they proceeded in that direction; and to their astonishment, in looking down one of these *lucarnes*—which did not exceed 0^m 8 in breadth by 0^m 32 in length—discovered that it concealed an immense precipice. And in this

abyss prevailed an azure light surpassing in beauty, transparency, and softness everything they had previously seen upon the glaciers. It is difficult to conceive of a more enchanting spectacle; and the spectators were so fascinated by it, that at first they did not perceive that the snow-crust which covered the enchanted grotto was only an inch or two in thickness. However, the peril was not very great, for the snow was thoroughly compacted, and had not yet been thawed or softened by the sun.

After satisfying themselves with admiring the beauty of this unique phenomenon, they proceeded, in the true spirit of scientific observers, to inquire into its nature and cause. It was an immense crevasse, upwards of two hundred feet wide, and not less than three hundred and twenty-five feet deep. At the point where our explorers had struck it, it had no other opening than the small *lucarne* to which we have just referred; but further on it corresponded with a large crevasse open in the direction of the right bank, through which the light entered, and the interspace, or intermediary ridge, by tempering the reflection of the snowy sides, gave them an indescribable charm and softness. The sides of this grotto, resembling colossal walls of crystal, were composed of horizontal and parallel layers, from a few inches to

three feet in thickness, of snow indurated and solidified by pressure, but retaining its crystalline character; for it had not yet assumed the granular form of the so-called *névé*. The strata of snow were generally separated by a thin course of ice, but a loose and bulbous ice, though deeper in tint than the rest of the grotto walls. The guides were unanimous in regarding each of the strata as representing a year's fall of snow; and this explanation may, perhaps, be accepted without demur. As for the thin courses of ice, they may be referred to the action of the sun, which has been successively brought to bear, every summer, on the surface of all the annual layers.

Continuing their adventurous route, they met with numerous crevasses of the kind just described, and soon became convinced that the ground they trod was entirely undermined; for, on looking into an open crevasse, they generally discovered that it was prolonged into the interior of the mass, far beyond its superficial limits: others were open on the surface throughout their whole length.

After traversing for nearly an hour these fields of snow, they passed on to the *névé*, where they fell in with much red snow. As the minute organisms which compose this snow are usually accumulated in the greatest numbers at an inch

or two beneath the surface, the traveller necessarily, as he treads them under foot, renders them more conspicuous ; so that each step he takes, he leaves behind him, as it were, a track of blood, which is visible at a considerable distance.



ORGANISMS OF RED SNOW (PROTOCOCCUS NIVALIS).

It was on the right-hand border of the glacier, about three hours' walk from the village of Viesch, that our travellers encountered their most formidable experience. They were forced to descend a rocky steep, almost vertical, and of great elevation, at the bottom of which tumbled the waters of a magnificent cascade. The road was a kind of gangway, with here and there some slight projections affording a steadying point for the feet. When these were insufficient, the travellers clung as best they could to the sides of the narrow pass, supporting themselves with their sticks, or obtained the assistance of the guides ; though to the latter resource their *amour-propre* was not

willingly reconciled. When they once more regained the glacier, and contemplated the terrific descent they had accomplished, they could scarcely believe it was the track usually followed by the herdsmen. Jacob assured them, however, that there was no other. How did they manage to lead their sheep along it? To this question Jacob had no satisfactory answer; but our travellers were afterwards told at Viesch that it was really the only route from the upper pastures, and that the sheep are hauled along by ropes attached to their horns, or, if they have no horns, to their neck. However, the shepherds themselves do not often essay this path. When once the sheep have been transported to their Elysian fields, they are left to their own devices until autumn; and it is only now and then that a shepherd repairs thither to carry the salt of which they are in need.

Several times, as they advanced along the Viesch glacier, our pioneers of science were enabled to examine the mode in which the glacier wears away and moulds its banks. The predominant rock here is still granite; sometimes of very fine grain, sometimes in large crystals, which does not prevent it from being, at numerous points, as smooth as polished marble. Here, too, may be distinctly traced the parallel striations which



STRIATED ROCKS AND ROCHES MOUTONNÉES.

constitute one of the peculiar characters of the polish wrought by glacial friction.

At four in the afternoon they halted for the last time. They were still on the right bank of the Viesch glacier, at a point from which they discovered, for the first time, the bottom of the

Valais. From this place, too, they observed several ancient moraines which stretched afar on the glacier's left-hand bank, up to a height of several hundred yards above its present level. A quantity of erratic blocks are scattered at still higher elevations,—and, indeed, seem to mount to the very summit of the peak.

They had two leagues more to accomplish. No one was very weary, though for so many hours they had been afoot; but they could not repress a cry of surprise when, at a sudden turn, Jacob, the principal guide, pointed out the road they would have to follow. A road? No, indeed; neither road nor path, but a narrow track, which coiled itself round and round a very precipitous acclivity at least 950 feet in height. The hopeless look which overspread the countenances of some of the party, and the resigned expression of others, would have afforded the subject of a lively picture, had there been among them an artist not too weary to attempt it.

However, at six in the evening they reached the châteaux of Märjelen, where they intended to pass the night, and where the shepherds received them very cordially.

Next day they mounted at once upon the Aletsch glacier. At the point where it bends,

they enjoyed a magnificent view in two directions. The Dent Blanche, the Matterhorn, Monte Rosa, and the Strahlhorn formed the background of the view to the south-west; while in front of them, to the north, rose from the depths of the glacier the great summits of the Jungfrau, the Eiger, and the Mönch, which seemed to encourage them to renewed efforts, they appeared so close at hand.

Generally speaking, the glacier of Aletsch is very smooth; and of all the Alpine glaciers it has the slightest inclination. For nearly two hours the travellers trudged along the hard compact ice; after which they passed into the region of crevasses, which forms the boundary between the ice and the *névé*, and measures about a league in breadth. The *névé* which succeeds it is the finest in Switzerland. It begins nearly at the same elevation as the Faulberg. At a distance it is recognized by a certain air of *oldness*, which contrasts very strikingly with the dazzling whiteness of the upper fields of snow. It sinks towards the centre, and rises on each side; but this is an essential character of all the *névés*. The crevasses here were very few on the occasion of our travellers' visit, and those met with were very narrow. At the snow-fields which begin with the ascent, they made, about half-past nine, their first halt for the day—at a place which they called "the Traveller's



THE ALETSON GLACIER

Rest," because the journey they had just made, and the immense steeps which rose before them, invited them naturally to take some refreshment there.

On the first plateau of snow they found some crevasses, which are always frequent where the inclines begin to increase their gradients. These, like the crevasses of the Viesch *névé*, are *crevasses de terrassement*. Some they saw which measured nearly a hundred feet in width ; but as these are not very continuous, they can generally be doubled. Sometimes they were concealed by snow, and the guides trod warily and slowly, sounding as they went, to prevent the travellers from plunging unexpectedly into some yawning gulf. In this way they scaled several terraces, and, directing their course invariably to the westward, arrived in a vast open space, everywhere dominated by huge peaks, of which the loftiest was the Jungfrau. Here Jacob compelled them to make a second halt, while he reconnoitred the ground. As for the travellers themselves, they saw everywhere what seemed to be insurmountable difficulties. To the right, vertical steeps ; to the left, masses of ice which threatened to crush them in their fall ; and in front, the *rimage* or great crevasse, which appeared impassable with its yawning gulfs. When Jacob was asked in what direction lay the route,

he refused to reply; contenting himself with saying that all they had to do was to follow him undoubtingly—and that as for himself, he saw already the road he designed to take. He was justified in thus evading useless inquiries, for had everybody been allowed to offer their opinion in difficult conjunctures, the summit would never have been reached at all.

It was now near noon: the heat was excessive; and, to refresh themselves, the guides applied handfuls of snow to the nape of the neck. Some of the travellers followed their example, in spite of the remonstrances of their companions, who, in their alarm at such an imprudence, forgot that in these elevated regions the material organism, in the same way as the moral nature, is less subject to pernicious influences than in the plain. The refraction of the sunbeams from the mirror-like surface of the snow was most intense, and nearly insupportable. In such circumstances a veil becomes indispensable; though it has the great inconvenience of rendering the step less firm, and of considerably augmenting the heat of the face by keeping the fresh air from it. So that Agassiz preferred to run the risk of a grilled face rather than make use of a veil.

Now they steered their course straight for the

great *rimage* ; which they reached after climbing a fourth terrace. It is a gulf of unknown depth, which opens on the incline of the last terrace but one, and penetrates somewhat obliquely into the mass of snow. Nowhere is it less than eleven feet wide, so that it could not be crossed without the aid of a ladder. Before proceeding, they examined the ruins of a landslip which were lying on their left. It seemed to have been of recent occurrence, for the traces of its progress across the snow were still quite fresh. They were much interested in observing that the remains of this avalanche, loosened and sent adrift from a summit not less than 9700 feet in height, were composed of alternate strata of compact blue ice and of white ice which had all the appearance of frozen snow. These various strata were one, two, and even three inches in thickness, and alternated three and four times in a block of a cubic yard.

Their next thought was how to pass the great crevasse. Their ladder was twenty-five feet long, and consequently more than sufficient. But, immediately above the gulf, the slope of the terrace was frightfully rapid for a space of about thirty-six feet. They estimated it at 50°. More: the snow, which hitherto had been exceedingly loose and almost powdery, had suddenly assumed an excessive consistency, so that the guides were

forced to excavate places for the feet to rest in. However, the enthusiasm of science is not easily daunted, and the explorers resolved on pressing forward, led by their guides. When the latter had scaled one half the terrace, they lowered a rope to the travellers; and one end being fastened to the ladder, and the other held by the guides, it supplied a kind of balustrade. Thus all arrived without inconvenience, though not without difficulty, at the summit of the terrace. It may be that the guides exaggerated somewhat the dangers of this experience, for they prodigalized their directions and their support with an excessive and unnecessary liberality.

It was two o'clock when the travellers reached the *col* of the Roththal. It is described, this *col*, as closely resembling that of the Oberaar. Like the latter, it is dominated by two majestically lofty peaks—the Jungfrau on the north, and the extremity of the Kranzberg (12,198 feet) on the south. It measures some yards in breadth. The fogs accumulated in the depths of the Roththal prevented them from obtaining more than a transient glance at the wild and rugged valley, which the popular fancy has associated with a well-known legend.

The elevation of the topmost peak above the *col* was estimated at about 950 feet, and it was thought that, though the incline was formidably

abrupt, the ascent might be achieved in less than an hour. It was soon discovered, however, that the ascent was more difficult than had been supposed: instead of snow, the surface was hard ice; and as the axe was obliged to be kept constantly going, progress was necessarily slow. For a weary hour they climbed the steep without apparently drawing any nearer to the summit, and then a dense fog surrounded them—so dense that the rearward members of the column could scarcely distinguish the figures of its leaders.

At the steepest part of the ascent Professor Forbes found, upon measurement, that the angle was 45° . So hard and tenacious was the ice, that, at one time, only fifteen steps could be accomplished in as many minutes. And then the cold was so keen that everybody feared lest his feet should be frozen, though keeping them in motion as much as possible. Their position began to be really critical, and Agassiz asked Jacob if he still hoped to carry all his company to the summit. The guide answered with his usual composure that he had no doubt of success, and, to the cry of *Vorwärts!* they resumed their enterprise with a fresh burst of vigour. One of the guides, however, had quitted them, being unable any longer to endure the view of the precipices on the travellers' right; and it must be

owned that the route was sufficient to terrify all who were not sure of their head or their feet. This last ridge (*arête*, as the French call it), which resembles the section of an inclined cone, with a vertical side, dominates on the east the snow-fields the party had just traversed, and on the west the *névé* of the Roththal. The inclination on the west side, however, is somewhat greater than on the east, for the fragments of ice detached by each blow of Jacob's axe all rolled into the latter valley.

As the explorers had no time to lose, they ascended in a straight line, without any deviation. And this, indeed, was the safest and most rational way; for, according to the laws of mechanics, a man has much more strength when supporting himself on the point of his feet, and turning his face to the incline, than when mounting obliquely; so that if, through any mishap, one of the party had slipped, it would not have been impossible for the others to have held him, though otherwise it would have been very difficult. Further: Jacob made them tread the very border of the ridge; because the ice there was not so hard, and, consequently, they could quicken their pace. The result was that the precipice was constantly beneath their eyes, being separated from them only by a projecting ledge of snow. "Several times," says M. Desor, "when I stretched out my pole a

little further than ordinary, I felt it traverse this ledge of snow, which was not more than 0^m 6 thick in many places ; and through the hole thus made our glance plunged vertically to the bottom of the great amphitheatre which lay at our feet. Far from dissuading us from this experiment, our guides, on the contrary, encouraged in it all who were exempt from vertigo ; and I believe it was an excellent way of inspiring us with confidence.”

Meanwhile the summit was wreathed with mists ; and the prospect was clear only in the east, where towered the Eiger, the Mönch, and the lofty peaks which enclose the ice-rivers of the Oberaar and the Unteraar. They had begun to abandon all hope of enjoying the spectacle their imagination had faintly pictured, when suddenly the dense cloud-curtain was lifted up as by an unseen hand, and, as if to reward the heroic perseverance of the explorers, the Jungfrau revealed itself to their enraptured gaze, in all the splendour of its powerful and majestic forms. Needless to say that the hearts of the travellers filled with joy at the unexpected but delightful change. And it embodies, *in petto*, the history of life ; it illustrates the truth of the old adage—*Audaces fortuna juvat*. Faint heart never yet won the favour of the spirit of the mountains !

After continuing yet a while their ascent in the same direction, they abruptly diverged to the left, to gain a spot where the rock was bare ; and in this way they traversed the inclined surface of the semi-cone, the breadth of which at this point was about 320 feet. For a few minutes they lost sight of the summit ; and so, when they reached the rock, they saw, as if by an effect of magic spell, its culminating point rising a few feet from them, and felt they were in the immediate neighbourhood of the goal which had so long seemed to mock their efforts. Of the little company of thirteen adventurers who had started from the châteaux of Märjelen, eight gained the summit ; namely, Forbes, Agassiz, Desor, and Du Châtellier, with the guides, Jacob Leuthold, Michel Baunholzer, Johannes Ablanalp, and Hans Jaun of Meyringen. In this successful ascent of the Jungfrau we therefore find that England, France, Germany, and Switzerland were represented.

Here for the first time the gaze of the explorers rested on the Swiss plain. They stood on the western brink of the section of the cone, with the mass beneath their feet which divides the valley of Lauterbrunnen from that of Grindelwald. From this moment, the scene appeared to undergo a complete transformation. The mountain-masses, which had seemingly shrunk in size as they as-

cended, were now, in the eyes of our travellers, enlarged by all the height they had just traversed. Close to their rocky station the mountain formed a small angle about ten feet below the highest peak; this marks the limit of the ice, which here gives place to snow, or to a very coarse, loose *névé*. They saw, with something of terror, that the space which separated them from the apex was a knife-like ridge, from 0^m. 15 to 0^m. 30 in width, with a length of about twenty feet; while the slopes to right and left had an inclination of 60° and 70°. "We shall never reach the top," exclaimed Agassiz; and such was the general opinion. Jacob pretended, however, to see no difficulty, and declared they should all go. Depositing the articles he carried, he manfully started forward, passed his pole across the ridge in such wise as to keep it under his right arm, and stalked along the eastern flank,—treading down the snow with his feet as much as possible, in order to facilitate the progress of his followers. In this way he reached the summit without difficulty. His coolness and courage reassured the travellers, and when he retraced his steps to lead them to the coveted goal, no one was so craven as to refuse to follow him.

What is the summit of the Jungfrau? Not, as many readers will suppose, a broad space like the

top of a Sussex down; but a narrow platform, not exceeding two feet in length and one foot and a half in breadth ($0^m\ 65 + 0^m\ 48$). Its shape is a triangle, with the base turned towards the Swiss plains. As it affords standing-room for only one person at a time, each traveller ascended to it in turn. Agassiz was the first to mount, supported by the sturdy arm of Jacob, who preceded him. He remained there for nearly five minutes; and when he rejoined his friends, they saw that he was very much agitated; and, indeed, he owned that never before had he experienced so profound an emotion. Next it was the turn of M. Desor, who found no difficulty in making the short-traject, and, when he gained the apex, was no more able than Agassiz to restrain his feelings in the presence of so grandly beautiful a spectacle. He remained there some minutes; long enough to take care that the panorama of the Jungfrau should never be effaced from his memory.

It is not the vastness of the field which the eye embraces that makes the special charm of these lofty mountain-prospects; for, in panoramas of such extent, the outlines are almost always vague and undefined. But even were it otherwise, were they as distinct as the contours of the Highland hills when seen from the lower valleys or river-straths, they would not long arrest the attention

of the spectator, which is much more strongly attracted by the bold contrasts of the colouring, and the wonderful effects of light and shade. In the view from the Jungfrau, what most impressed and delighted those who gazed upon it was the various features near at hand. In front of them extended the Swiss plain; and at their feet rose in successive tiers the foremost mountain-ridges, which, by their apparent uniformity, seemed to augment and enhance the potency of the huge peaks that towered above them. At the same time, the valleys of the Oberland, which at first had been shrouded in light mists, revealed themselves in fugitive glimpses, and enabled the eye to contemplate, as through a series of crevices and crannies, the lower world. To the right was seen the valley of Grindelwald; to the left, in the depths, an immense crevasse or chasm, at the bottom of which a thread of silver followed its windings: this was the valley of Lauterbrunnen ("waters only"), with the stream of the Lütschine. But, above all, the gaze of the traveller rested upon the Eiger and the Mönch. They found it difficult to believe that these were the peaks which, when seen from the plain, had seemed to belong rather to heaven than to earth. Here, however, they contemplated them from above, and their proximity admitted of their being observed

in something like detail. In an opposite direction—that is, on the west—rose another summit, less colossal but more graceful; its declivities, entirely clothed in robes of snow, have procured it the name of *Silberhorn*, or the “Silvery Peak” (12,166 feet); and beyond, like foamy waves, rolled peak after peak, likewise mantled with snow,—the nearest and loftiest being the *Gletscherhorn* (13,064 feet). These summits form the retinue of the *Jungfrau*, which rises in their midst like a queen above her subjects.

Beyond the *Eiger* and the *Mönch*, in an easterly direction, the mountainous masses which border the glaciers of *Finsteraar* and *Lauteraar* formed another and very extensive group, of severer character than that which surrounded the watch-tower of our scientific enthusiasts. These were the *Viescherhörner*, the *Oberaarhorn*, the *Schreckhorn*, the *Berglistock*, the *Wetterhorn*, and, in the centre, the *Finsteraarhorn*,—the loftiest of the Swiss mountains, which alone towered above the level of the *Jungfrau*, and seemed with its rocky and abrupt declivities to defy human ambition.

To the south the view was impeded by the clouds which had gathered about the *Monte Rosa* chain. But this inconvenience was more than compensated by a very extraordinary phenomenon which strongly interested our adventurous *savants*.

Dense fogs had accumulated on the left, in a south-westerly direction. They rose continuously from the recesses of the Roththal, and began to stretch away to the northward, over the ridges which separate that valley from the Lauterbrunnen. The explorers were apprehending a second invasion, when they suddenly contracted their bounds; owing, no doubt, to the influence of some lower atmospheric current, which prevented their further extension in that direction. Thanks to this circumstance, they found themselves all at once in the presence of a vertical wall of fog, the height of which was not less than 13,000 feet,—for it descended deep into the Lauterbrunnen valley, and rose high above the Jungfrau peak. As the temperature was below freezing-point, the small bead-drops of the mist were congealed into ice-crystals, and reflected in the sun all the colours of the rainbow, until it was as if a golden mist glowed and sparkled over the wondrous scene.

At four o'clock the travellers began the descent; a much more difficult and dangerous enterprise than the ascent. When fathoming with the eye the immense depth of the declivity that lay before them, it may be forgiven them if they wished themselves already at the bottom. So steep was the decline, that the ordinary mode of progression was impossible; the travellers descended back-

wards. At first the boldest felt some anxiety; but familiarity with danger breeds contempt of it, and after a while they could choose their path and set down their feet with some degree of composure. Yet the incline continued to preserve a gradient of 40° to 45° ; which is about equal to that of the roof of a Gothic cathedral. At one point it even *sharpened* (so to speak) to 87° . In spite of every obstacle, however, the descent to the *col* of the Roththal was accomplished in less than an hour.

From hence to the *châlets* was a distance of six French leagues; and so it came to pass, as, indeed, had been foreseen, that the most thickly crevassed part of the glacier would have to be crossed by night. But no one showed any symptoms of alarm; and to cheer and encourage the travellers the moon rose, and the clouds disappeared almost entirely from the horizon. With quickened steps they traversed the *névé* which succeeds to the snowy plateau, the moonlight spreading over every object its delicate veil of silver.

We must now imagine our little company to have arrived at the elevation of the two *cols* previously mentioned—that of Löttsch, on the west; and that which leads to the Viesch *névé*, on the east. The moon was exactly in the axial line of the glacier, so that the entire expanse of

that vast river of ice was uniformly illuminated, and shone with a soft and even tender lustre. The portals of the two *cols* of Lötsch and Viesch presented a magical effect; for as they lie at right angles with the direction of the glacier, the mountains which limit them to the south projected grandly fantastic shadows, while the great dark clouds accumulated behind the Aletschhorn invested the picture with a dignity worthy of its subject. Add, that a perfect atmospheric calm and an absolute silence reigned around the explorers, and the reader will feel that it must have been with no ordinary emotions they gazed upon this revelation of the magnificence of Nature.

They speedily entered into the region of crevasses, and thought it advisable again to have recourse to the assistance afforded by the rope; for though the moonlight was very fine, it was not sufficiently intense to enable them to distinguish accurately between the old snow and the new—especially throughout a journey of a quarter of an hour's duration. Each of the party stumbled in turn, but the help they afforded one another surmounted every difficulty: they gradually learned to avoid the crevasses covered with snow; and finally emerged into less dangerous ground without accident.

After having duly refreshed themselves, they

started on the last stage of the descent, which covered about three leagues. The route, however, was easy, and the travellers speedily reached the shore of the Märjelen lake. Here a last halt was called, that they might admire another glorious spectacle. Seen in the clear moonlight, the blocks of ice which, like small bergs, floated on the bosom of the lake, produced a curiously enchanting effect; at the same time, the glacier-side shone like a huge wall of crystal; and what enhanced the attractiveness of this Alpine picture, was the contrasts of light and shade afforded by the moon's passage behind the heights that overhang the lake. Such a picture was a fitting close to a succession of scenes of almost unearthly beauty and grandeur.

The ascent of the Jungfrau has since been accomplished by many tourists, and now enters into the category of ordinary Alpine adventures.


V.

Ascent of the Galenstock.

THE traveller starting from Reichenbach arrives in a few hours at the small, solitary, and elevated village of Guttannen, near the Falls of the Aar. Then he proceeds to ascend the valley of the Aar, in the dark shadows of its huge and threatening granite cliffs; and afterwards, diverging to the left, climbs a rock-strewn glen to the Hospice of the Grimsel,—a massive building, roughly but solidly built, and fitted to resist the burden of the winter-snows, which are often hurled against it in heavy whirls and drifts. Probably in the whole world no inn is more drearily situated. It stands in the centre of a small rocky basin, with rugged precipices and sterile declivities all around it; precipices and declivities relieved here and there by belts of withered grass and green moss, and patches of white snow that never melt. Near at hand lies a black tarn, which would have supplied Dante

with a new image of horror for his "Inferno." Though a deep crust of snow lies upon it in the winter, it is said never to be frozen, because fed by a warm spring. Beyond it a small spot of pasture affords the scanty nourishment required by the cattle belonging to the inn for a month or two in summer. Every feature of the scene, however, is worthy of the Land of Desolation, of the bleakest deserts of the Arctic World. No signs of life are visible except the few chamois which occasionally appear on the icy crags of the neighbouring glacier, or the marmot which burrows here and there in the crumbling soil.

The Pass or Valley of the Grimsel, remote and dreary as it is, recalls the sights and sounds of battle. Even here, high up among the solemn mountain-peaks, men have met together in deadly combat. It was in August 1799 that the Austrians encamped upon the Grimsel, some 1500 strong, for the purpose of checking the descent of the French by this sequestered route into the fair valley of the Rhone. Their small force occupied the entire declivity from the hospice up to the very summit of the Pass; while the French, numbering about 3600 men, under General Gudun, had pitched their tents in the Oberhasli valley, near Guttanen. Colonel Strauch, the Austrian commander, regarded his position as virtu-





HOSPICE OF THE GRIMSEL

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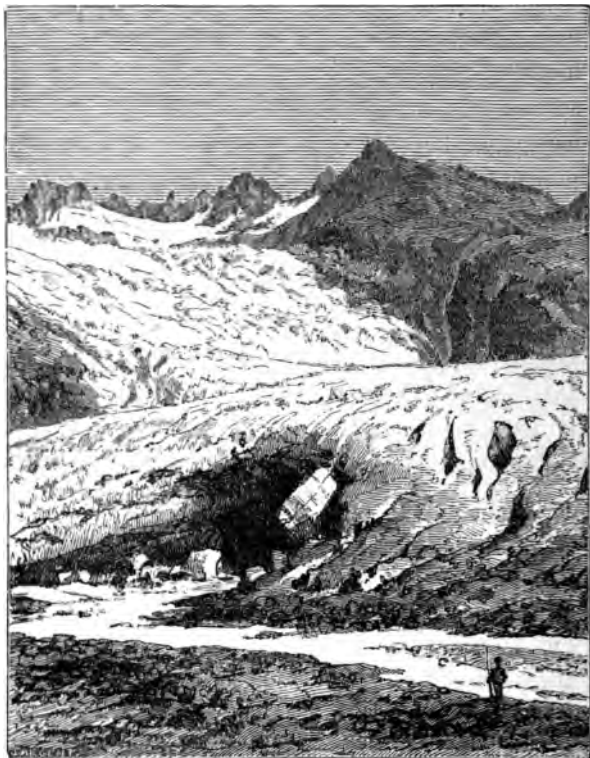
ally impregnable ; for his fire not only swept the whole slope below him, but the narrow clefts and gaps in the rocks on either side, with their screens of masses of granite, could be defended by a few men, each gap forming a Thermopylæ. To the French general also the post seemed impregnable ; and when he received orders from Massena, who then commanded the French army in Switzerland, to force the pass, his anxiety was great. He felt that to lead his soldiers up the rugged declivity commanded by the Austrian guns, was to lead them to certain death. After some inquiry, however, he found that Fahner, the landlord of the inn at Guttanen, was acquainted with a route over the mountain called Nägeli's Grätli, which led to the summit of the Grimsel, above the Austrian position ; and the offer of a large gratuity was sufficient to secure the landlord's services.

On the 14th of August 400 men, under the guidance of Fahner, set out on their laborious and difficult journey ; while a small detachment was ordered to cross the Sidelhorn and descend upon the Grimsel in a direction which would bring it to a junction with the party guided by Fahner. Meantime, Gudin, with the main body of his troops, steadily made his way up the valley to the platform on which the hospice now stands,

and attacked the Austrian position in front. The French charged with their usual *élan*; and the Austrian commander, though conscious that in this quarter he was impregnable, drew down the greater part of his force from the summit of the Grimsel, that the defeat of the French might be more decisive. He supposed that Nature had effectually protected his rear. Great was his surprise, therefore, when continuous firing broke out on the heights above him, and the French soldiery were seen descending the snowy steep. Their sudden and unexpected appearance confused the Austrians; they began to waver; Gudin saw his advantage, and pressed home the French attack; and it proved so successful that the Austrians fled in disorderly flight up the Grimsel, and towards Obergestern. On the summit of the Grimsel they encountered the detachment which had crossed the Sidelhorn, while from the opposite quarter advanced the troops under the guidance of Fahner. The unfortunate Austrians were hemmed in by a ring of steel and fire, and in their despair beat their sabres and muskets to pieces upon the granite rocks. Very few escaped; but as resistance was hopeless, the slaughter was not considerable, and most of the Austrians suddenly surrendered themselves. They had been out-generalled, and had suffered themselves to be

driven with comparative ease out of a position which a little vigilance would have rendered inaccessible.

The summit of the Grimsel Pass is 700 feet above the hospice, 7530 feet above the sea. On its crest sleeps, except when stirred into motion by winter winds, another gloomy tarn, poetically named the *Todten See*, or Lake of the Dead, in allusion either to the barrenness of the surrounding scenery, or to the number of corpses flung into its waters, the bodies of those who perished on the Pass. Along the mountain summit is traced the boundary-line between Berne and the Valais; and about half a mile from the hospice, at the foot of the Rhone glacier, the Rhone wells forth from its cavern of ice. Leaving the glacier on the left, with its huge bulk rolling surely but imperceptibly down the valley it fills with its masses of ice, the traveller mounts upward to the Furca, or Fork, where the summit of the Pass is reached between two snow-clad mountain-peaks. A grand panorama of peaks and precipices is visible from this point; the Finsteraarhorn towering conspicuous in one direction, and the Galenstock, with its cupola of snow, in another. The latter throws its shadow full over the great glacier of the Rhone, and lifts its rounded and



SOURCE OF THE RHONE.

characteristic summit to an elevation of 11,900 feet above the sea.

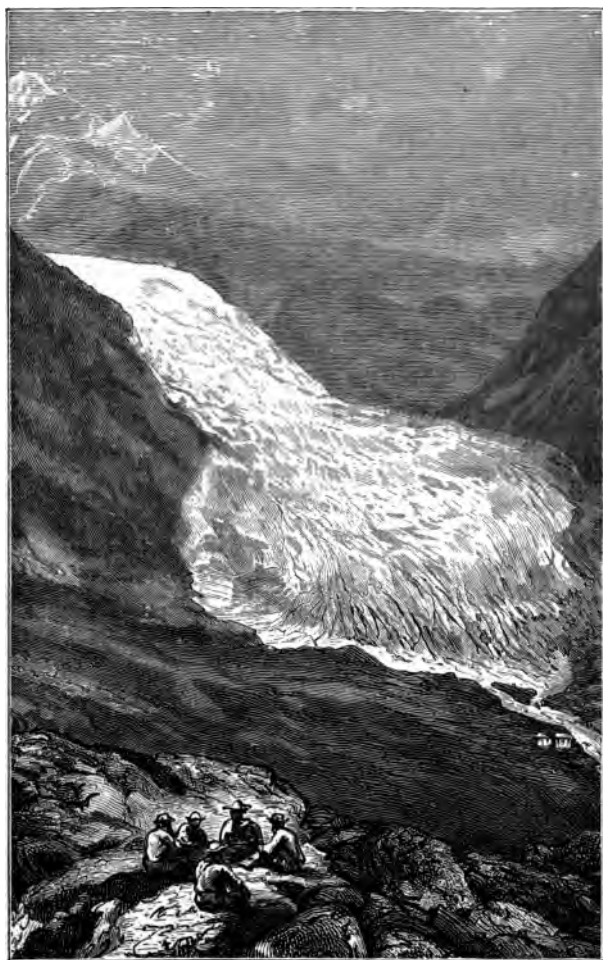
On the 18th of August 1845, a small company of eight persons wound their way towards the

summit of the Grimsel Pass. They reached it at four o'clock in the morning, when the glow of the morning sky lighted up for a while the gloomy surface of the Lake of the Dead, and a luminous halo rested above every valley, and the peaks and pinnacles of the Monte Rosa chain burned with colours of indescribable beauty. These eight individuals consisted of M. Dollfus-Ausset, his son Daniel, and M. E. Desor, with five guides; and the object they had in view was the ascent of the Galenstock. Years before, M. Desor had conceived the idea of this enterprise, and had communicated it to a veteran Alpine guide, Jacob Lenthold. "You must observe," replied Lenthold, "that the Galenstock has a character of its own. Its slope of ice is unbroken for fully 3000 feet, and can be scaled only by cutting steps the entire distance. In a case of necessity this might be accomplished; but on a hot day we should run the risk of finding these steps melted on our return. And to cut fresh ones, descending and going backwards, would be no light matter. Still, it is possible the ascent might be effected on a day in August or September, after a heavy fall of snow."

It was August, and a snow-storm had loaded the Galenstock with an immense burden of snow. Desor and his friends were sanguine therefore that they would conquer the Galenstock.

From the table-land of the Pass they descended to the upper declivity of the Rhone glacier, the frozen surface of which they traversed without much difficulty, though, in case the snow should treacherously conceal here and there a perilous crevasse, they had roped themselves together. This, by the way, is a precaution which should never be neglected in Alpine climbing. They soon gained the colossal bulk of the Galenstock itself, treading on frozen snow, which afforded a tolerably secure footing, and arrived at a depression or hollow on the flank of the mountain, to which they gave the name of the Col de Galen. It opens up to the aspiring traveller a picture of the most attractive character, embracing the undulating line of the Bernese chain, with the soaring crest of the Finsteraarhorn sharply defined against a clear blue sky; and, on the other side, the fir-clad slopes of the Réalp valley, with its Capuchin convent and chapel.

At eleven o'clock, after a brief rest, the adventurous party began the ascent, easily climbing a gentle slope that seemed to have been laid down by Nature to furnish them with the means of making a triumphal progress. The Edinburgh citizen mounts not the declivities of Arthur's Seat with lighter or less laborious step than that of M. Desor and his companions as they scaled the great



THE GALENSTOCK AND THE GLACIER OF THE RHONE.

Alpine mountain. They had no occasion to use the axe; over the firm but not solid snow their feet bounded with a facility that gave them confidence. The topmost point was attained, and there, in token of their easy victory, the younger M. Dollfus planted a standard which he had prudently prepared on the previous day. They had some right to a feeling of pride; for human feet had never before stood where they had taken up their elevated position.

The beauty and attraction of the prospect from a great elevation depend, as M. Desor remarks, more upon the character of the details close at hand than upon its extended range. The remote peaks, touched by the fires of heaven, add to the sublimity of the scene, and produce a sense of awe and mystery; but what the eye delights to rest upon is the fantastic labyrinth of jutting pinnacles and sharp ridges in the midst of white wastes of snow, or the bold contrasts of light and shade exhibited by neighbouring objects. The travellers, from their vantage-ground on the crest of the Galenstock, saw first and foremost the deep shadows of the valley of the Aar; and those, not less deep, of the ravine through which the Rhone tumbles its waters after issuing from its glacier-cave. Next, on the plateau erected between the two great river-valleys, the memorials of ancient

glaciers drew their rapt attention. Beyond, their gaze took in a vast array of giant Alps, including the Schreckhorn, the Wetterhorn, and the Rosenhorn, all of which had witnessed their feats of courage and resolution, and were associated with recollections of dangers escaped and difficulties overcome.

There was so much in the panorama to occupy and interest them, that it was nearly one o'clock before they began their descent. The delay was not wholly prudent; for the sun had so acted on the snowy carpet that clothed the bare flanks of the mountain as to render it troublesome of passage. At every step the travellers sank knee-deep. On one side the slope was insufficient to permit them to slide. As the guides said, "They wanted horses to the sledge;" an expression which indicates their intention to take their employers by the legs, and run down the side of the mountain with them.

They soon began to near the place where they had reason for thinking that the snow formed a kind of arch or slope over the rocky steeps; and to avoid danger they followed closely in their morning's track, marching in single file, with a guide named Jaren at their head. A few paces behind was M. Desor, next to him came the younger Dollfus, then three other guides, and in the rear M. Dollfus, senior, accompanied by the

fifth guide. They marched onward in all the hilarity of spirit natural to men who had accomplished an arduous task ; and were picturing to themselves the amazement with which the tourists and guides of the Oberland would see their victorious standard floating from the Galenstock's hoary brow, when, suddenly, before M. Desor, opened a chasm in the ground, as if riven by lightning, dazzling him with the flash of its azure walls of ice. Only for a moment!—only for the time occupied by the subsidence of the mountain-declivity. The cleft which, in splitting, had grazed M. Desor's left foot, had passed between the legs of the foremost guide, who, either from accident or impulse, had thrown himself back on the snowy slope. M. Desor was silent with the terror of the surprise ; and on turning to his companions he saw that their faces were pale with fear. And no wonder ! They were not all there ! At a couple of paces behind M. Desor a stick hung over the chasm, but he who had carried it had disappeared along with the mass of the mountain that had so suddenly been disrupted. The cause of the agitation that prevailed was not immediately apparent to M. Dollfus, who was some yards in the rear. But he soon discovered that one of the party was missing, and that the missing person was his own son !

At first they were all incapable of movement, almost of reflection ; and before they could recover their composure, they found themselves caught in a whirlwind of snow, sent up from the fallen mass. They were by no means sure of their own safety ; and the thought crossed their minds that yet another landslip might take place, and draw them too into the abyss. But by degrees the snow-cloud diminished ; they were able to recognize one another ; and as no new crevasses opened, they allowed themselves once more to hope. Fastening round his waist a belt carried by M. Dollfus, to which the rope was attached, M. Desor crept to the brink of the precipice, and stretched himself full length upon the snow. With what eager eyes the elder Dollfus followed his courageous action, and with what eager lips did he inquire if he could see any traces of his son ! At first, indeed, M. Desor could discover nothing but an immense mass of snow, more than 3000 feet below him, advancing in an avalanche on the valley of Gorschen, above Réalp. As his eyes grew more accustomed to the bewildering snow-mirage, he fancied he perceived directly beneath him, and in the track of the avalanche, a dark object. What did he see ? He feared to answer lest he should be mistaken ; but after a while he had no more doubt,—it was his friend's hat and

shoulder that emerged from the drift. Was he alive, or dead? Who could say? It seemed impossible that he could have escaped being crushed or smothered by the snow; yet still it was strange that, instead of having been engulfed by the avalanche, he should have remained, at a depth of only 80 feet, so near its surface. But was not that a movement? Yes, there could be no doubt of it; he stirred; he endeavoured to rise; he was not dead.

M. Desor had barely uttered the words, "He lives!" when Wahren, the chosen guide of M. Dollfus, sprang over the edge of the crevasse, as if to hasten to his rescue. All thought he would have been killed; but he fortunately fell into the soft snow of the avalanche only thirty feet from the top, and then sank so deeply that he could not disengage himself. Meantime, the younger Dollfus gained hope and courage from the information that his father had not met with any injury. His friends inquired whether his arm was broken or out of joint. This he could not say, but he declared that it mattered nothing whether it was broken or dislocated, so long as no one was hurt but himself.

It soon became clear in what way he had been checked in his dangerous fall. The long steep declivity of the Galenstock proved to be inter-

rupted by an isolated crag, a kind of rocky cairn or pyramid; and against this barrier struck the snow-avalanche that had carried M. Dollfus with it. A portion of the mass remained there; and fortunately it was the portion in which M. Dollfus lay embedded. But our adventurers lost no time in speculating on the circumstances of an accident which it was infinitely more necessary to remedy. Strange to say, the guides, who generally show great presence of mind in the event of any mishap, were, on this occasion, unable to suggest any measures of relief. But the travellers saw that it was impossible to descend the declivity in the direction taken by the avalanche. What had to be done was to raise the sufferer to their position; and this was evidently no easy task, inasmuch as between him and them were interposed, first, a vertical wall of upwards of thirty feet; next, the edge of the broken *névé*, or loose snow; and, finally, a steep slope of not less than fifty feet.

To overcome these difficulties they proceeded cautiously and systematically. A rope was fastened round one of the guides, and he was then lowered thirty feet, to the point where his comrade Wahren had plunged into the snow. Having released him, the two endeavoured to descend by the exercise of the agility and skill which the chamois-hunters acquire after long practice; and

by carefully feeling their way, and planting their feet only in places where the snow afforded a hold-fast, they contrived to reach M. Dollfus. Then they set to work to disinter him, for he was almost buried; and having accomplished so much, discovered that not only had he an injured arm, but that his right leg was so much hurt as to be incapable of use. And thus the task before them was to raise a crippled and wounded sufferer up a frozen, icy acclivity of between 60 and 70 degrees! It could not have been carried out by any but Swiss mountaineers. With the greatest tenderness, and with unflinching resolution, they contrived to bear him to the top of the slope. Then a cord was passed round his waist, and the guides above, assisted by the elder Dollfus and M. Desor, slowly and cautiously hauled him up. The same process was afterwards adopted with the two guides; and the whole party were once more gathered together on the summit of the precipice, their heart full of thankfulness to the Providence that had rescued them from what seemed inevitable death.

The events we have described had occupied several hours, and the sun was sinking in a glory of gold and purple behind the mighty Finsteraarhorn before they resumed their descent. The younger Dollfus, unable to walk, was carried by

one of the guides upon his back ; and all pressed onward to reach the Col de Galen.

It is pleasant to know that the remainder of their journey was accomplished without misadventure.

VI.

Ascent of the Wetterhorn.



ONE of the grandest summits of the Bernese Alps is the celebrated Wetterhorn, or "Peak of Tempests," which lifts up to the keen blue sky a crest of perpetual snow. Eternal storms seem to rage about and around its precipitous heights, and its ascent was long deemed impossible even by the hardest mountaineer. But it was not able to preserve its repute of inaccessibility against the courage and energy of English travellers; and in the summer of 1845 its topmost point was gained by Mr. Spier, under circumstances of considerable difficulty.*

We shall take up his narrative from the moment of his reaching the well-known Grimsel, an elevation of 6570 feet on the southern slope of the great Bernese chain, which is familiar enough to every mountain-climber. Here he and his party halted, and a conversation took place as to the

* The northernmost peak was also ascended by Mr. Wills in 1855.

proceedings to be adopted, and the probable issue of the enterprise. It terminated satisfactorily, and none uttered the shameful word "return." Two of the boldest guides, J. Jaun and Caspar Alphenthal, volunteered to accompany Mr. Spier; and it was easy to place confidence in them, as both had previously trodden the summit-snows of the Jungfrau. Leaving them, along with his former guide, to prepare for the expedition, the Englishman retired early, knowing that the next night would find them on the glacier of the Aar, where the prospects of repose did not amount to a certainty.

The next morning dawned upon them with a bright and cloudless sky. The three mountaineers were duly equipped with hatchets, ropes, cramps, and iron-shod poles; not forgetting a two days' supply of provisions, and the flag which was intended to bear testimony to the success of their exploit.

On leaving the Grimsel, their course lay among fallen rocks, and up a desolate valley which seemed the grave of Nature, bounded on the left by the Leidelhorn, and on the right by the Juchliberg and the Broniberg. This valley, situated about 7000 feet above the Mediterranean, broadened gradually; but its further extremity was blocked up by a rampart of ice, rising vertically between



THE AAR GLACIER.

two and three hundred feet in height. It was the terminal cliff of the huge Aar glacier. By dint of painfully climbing the lateral rocks the adventurers attained the summit of this wall, and from thence looked out upon a sublime panorama: the vast frozen glacier-river extending many miles in front, and all around the snow-shrouded acclivities, broken up into the wildest outlines, of peak after peak; the Finsteraarhorn, 14,000 feet high, and the Schreckhorn, Oberaarhorn, Viescherhörner, and Lauteraarhorn, varying from 11,000 to 13,000 feet. Dead giants these! mute and immovable, and robed in a sepulchral vesture of ice and snow!

Following the course of the terminal moraine, Mr. Spier and his companions gained the surface of the glacier itself, which was thickly veined with crevasses, running parallel to one another. As most of these were filled with snow, it was necessary to sound them carefully with poles before any one trusted himself to what might have proved to be a fallacious support. Keeping along the centre of the glacier for three hours, they arrived opposite the famous *Hôtel des Neuchatelois*, or hut constructed for M. Agassiz, in order that he might carry out his investigations into the progressive movement of the glaciers. Situated fully 300 feet above the level of the ice,



HÔTEL DES NEUCHATELOIS.

it is sheltered in a great measure from the head-long crash of avalanches, and from the effects of those hurricanes and snowstorms to which the upper regions of earth are so liable. It is not often that the eye of man rests on a picture so magnificent as that which now presented itself to the admiration of the travellers. The sun was setting; and its last glories of gold, and purple,

and rose, and emerald touched peak after peak, and glacier after glacier, until the whole scene seemed warmed with a new flush of life, and the vast mountain-chain shone as if composed of an unbroken mass of burnished gold. In the awful silence this sudden access of the richest colour had a strange effect, and it seemed almost as if the gates of heaven had been opened, and its splendour reflected on the lower world!

After taking every precaution against the severe cold, the travellers attempted to obtain a few hours' slumber; but not very successfully. Their minds were excited by the novelty of their situation. Towards midnight, moreover, several vast avalanches fell, and the echoes were filled with a roar like that of the loudest thunder. After this sleep became impossible; and the adventurers were soon afoot, preparing for the anticipated seventeen hours of successive climbing over ice and snow, rock and glacier. The first thing to be done was to descend to the level of the glacier, into the recesses of which, owing to its shattered condition, they were compelled to penetrate; finding themselves at the bottom of a well, and enclosed on three sides by precipitous walls of ice. To escape from their cold and dismal prison, it was necessary they should ascend these walls; and as Jaun with his short axe cut steps or

notches in the solid mass, they soon emerged from the shadow, and stood in safety on the glacier of the Lauteraar, where it effects its junction with that of the Finsteraar. The former ice-river descends from the Schreckhorn and the Col de Lauteraar; the latter is fed by the Finsteraarhorn and its sister-peaks.

Next they struck across the glacier towards the promontory of the Abschwung, the base of which they rounded with much caution, on account of the slippery nature of the ice. On attaining an elevation of about 9000 feet, they found, to their great delight, that the crevasses began to disappear, and that for miles the surface of the glacier was covered with a deep stratum of unbroken and unsullied snow; while in front of them rose the colossal bulk of the Col de Lauteraar, 10,000 feet in height, hitherto regarded as impracticable. So sharply and distinctly was its dazzling white crest defined against the deep blue sky, that it seemed close at hand; but they soon learned that it is not safe to calculate distances in regions where the vast proportions of the surrounding objects, and the peculiarly delusive reflection of the snow and glaciers, perplex and deceive the eye. For hours they waded up long slopes of snow, sinking knee-deep at every cautious step; and yet they seemed no nearer. At length the

first range was reached of those crevasses usually found at the foot of the steepest ascents. For safety's sake, the whole party were lashed together; and slowly did they grope their way among the labyrinth of "blue and ghastly abysses" to the very foot of the formidable Col de Lauteraar, which overhung their heads with its almost perpendicular bulk for some hundreds of feet, while from its ridge depended a mass of snow, threatening them with an insurmountable obstacle.

To be a successful mountain-climber, one must have a strong belief in the virtue of persistence; and even before this formidable difficulty Mr. Spier's heart did not fail him. He determined to press forward, though this seemed the very thing that was impossible. At his feet lay a broad crevasse, on the opposite side of which the snow-wall rose sheer and abrupt, not leaving space enough for a man to plant his foot. Jaun, the head guide, however, contrived with his alpenstock to excavate a hole in the snow, into which the whole party might leap with a fair prospect of not toppling into the dread abyss beneath. Then he crossed, and having secured a firm footing, extended his pole to assist the next comer, Mr. Spier himself. He jumped bravely; but the snow yielded, and he hung suspended over the chasm, with no other support than the outstretched pole.

Jaun, however, hastened to relieve him from his dangerous position. The other guides crossed without accident, and soon all were clinging to the wall of snow which constitutes the southern aspect of the Col.

It was now that the ascent began in earnest, the first guide having been relieved by the second in command, who, deftly wielding his hatchet, cut notches in the snow in which the travellers might place their hands and feet. So abrupt was the incline of the Col, that the forward movement of the body, inseparable, as all of us know, from climbing, brought chest and face into disagreeably close contact with the snow, the excessive glare of which, notwithstanding their blue glasses and their veils, tried them sorely. These difficulties made their onward progress very slow. The advance of the foot from one step to another could not be made without much circumspection; as a slip, or a momentary dizziness, or the slightest backward inclination, must have proved fatal to one or other of the party. It needed all the skill and coolness of the guides, all the courage and resolution of their English companion, to overcome the obstacles that lay in their path. But patience and perseverance! The truth of the old adage was once more demonstrated, and five hours after their departure from their night-encampment they

drew breath on the summit of the Col. The prospect before them fully repaid them for the labour of the ascent. At their feet, like a map, lay outstretched a great portion of the Switzer's land; they could see its heights and glens, its flashing lakes, its pine-woods, its massive glaciers, its quiet villages suspended to the sides of bold declivities. The romantic valley of the Grindelwald was just before them, sleeping in the shadow of gigantic mountain-ranges. On the left rose the great and little Schreckhorn and the Mettenberg; on the right, the goal of their ambitious hopes, the triple summit of the Wetterhörner—the Wetterhorn, the Mittalhorn, and the Rosenhorn: long slopes of snow descended from these huge summits to the brink of the upper glacier of the Grindelwald.

They stood on a plateau of snow, about 10,000 feet above the level of the sea. The huge peak of the Wetterhorn seemed to rise in close proximity to the height of another 2150 feet. But to reach its base it was necessary first to descend a portion of the opposite side of the Col they had just surmounted with so much difficulty. This part of their work was particularly alarming, owing to the terrible character of the precipices of ice and snow, and the wide crevasses which intersected and interrupted their path. By careful employment of

the ropes and hatchets, the descent, however, was safely accomplished ; and then the adventurers began the ascent of slope after slope of snow, warily avoiding the crevasses which drew their blue thread-like lines across the white expanse, and directing their course towards the superb central peak, known as the Mittalhorn. This rose above their heads like a huge pyramidal monument of purest ice and snow. It seemed so impossible of ascent that Mr. Spier for the first time felt daunted, and hesitatingly inquired of the guides whether they expected to attain the summit. Their prompt reply in the affirmative cheered him greatly, and it was with a good heart he undertook the task of scaling the hitherto virgin peak on the south-western side.

In its general features the ascent closely resembled that of the Col de Lauteraar, which we have already described. The time occupied, however, was longer ; for the crust of ice and snow being much thicker, the steps hewn out with the hatchet required to be enlarged by the feet, preparatory to every change of position. Thus the progress made was as slow as it was laborious : each man dug his left hand into the hole above his head, left by the axe of the advancing guide, and gradually drew up his foot into the next aperture ; the body, between each step,

ESCARPMENT OF THE WETTERHORN ON GRINDELWALD



reclining full length on the snow. The situation, perilous in itself, was rendered more so by the circumstance that the vision of the adventurers was every moment appalled by the sight of vast precipices of ice stretching above and below, and by the knowledge that a false step on the part of any one of them would probably ensure the destruction of all! When they had been three hours on the peak itself, the guides declared that in another hour, if no accident befell, the summit would be reached. Accordingly the banner of victory was prepared; and after a few minutes' rest, secured by turning cautiously round and placing their backs against the snow, they stretched upwards once again,—the guides carolling their national *lieder*, and everybody inspired with joy at the prospect of a successful issue to their enterprise.

“The peak, round which the white clouds play,”

appeared immediately above them; and when within thirty or forty feet of its crest, the chief guide, considerably thinking that his employer would naturally desire to be the first to tread the hitherto virgin summit, reversed the ropes, so as to place him first on the line, directing him to take the hatchet, and cautiously cut the few steps that were necessary. Mr. Spier successfully performed

his task ; and at one o'clock precisely the red banner waved its triumphant folds from the summit of the central peak of the Wetterhorn—

“ On that high mountain platform
Where morn first appears,
Where the white mists, for ever,
Are spread and unfurled ;
In the stir of the forces
Whence issued the world.”

Thus, after three days' continual ascent, our explorers had attained to a height of 12,154 feet. Up to this consummation their attention had been too closely fixed on the obstacles that impeded their progress to allow them to do more than bestow a passing glance on the wonders of the panorama that lay around them. But now they were at liberty to dwell on its various features, and to ascertain the relative positions of the mountains that surrounded them like “giant warders.”

To the north, the Faulhorn and a range of tremendous heights flung their massive shadows over the glassy expanse of the lake of Brienz ; in their rear could be seen the picturesque passage of the Brunig, together with the far-off gleam of the lakes of Lungeren and Lucerne, on the banks of which towered the pyramids of the rose-tinted Righi and the famous *Mons Pilatus*, both now profaned by the constant feet of inquisitive tourists. Eastward the eye wandered over a sea of

snowy summits, rolling away to the verge of the horizon in a succession of frozen billows. To the south the view was more distinct, and the giants of the Bernese Alps were visible, rising side by side: the snow-clad crests of the Rosenhorn and the Berglisloch in close proximity; separated from them by the Col de Lauteraar, towered the rugged Schreckhorn, so appropriately named the "Peak of Terror;" while, king-like, the lofty Finsteraarhorn soared high above his companions. To the right of these two peaks the prospect included the shining declivities of the Viescherhörner; and beyond these the three celebrated sister-summits of the great Eiger, the Mönch, and the Jungfrau, all exceeding the height of 12,000 feet. At the base of their colossal masses lay the Wengern Alp, apparently little more than a mole-hill; while far below glinted the red roofs of the village of Grindelwald, with the Lütschine trailing its silver ribbon through the valley. On every side of the wondering spectators vast precipices glittered in the sunlight,—

" The ice-cumbered gorges,
The vast seas of snow,
Where the torrents drive upward
Their rock-strangled hum,
Where the avalanche thunders
The hoarse torrent dumb ;"

and at their feet extended the immense reservoirs

of snow and *névé* which feed the great glaciers situated at a still lower level—namely, on the left, the upper glacier of Grindelwald and that of Lauteraar; and to the right, the glaciers of Gault, of Reufen, and of Rosenlauri, out of which the Wellhorn, the Tosenhorn, and the Engelhörner (“Angels’ Peaks”) lift their white heads dimly through the loose fluttering clouds.

Our adventurers began to cast wistful looks in this direction, for the guides had resolved upon striking across an unexplored region to Rosenlauri.

For about twenty minutes they had remained on the narrow summit of the Wetterhorn, exposed to intense cold, and buffeted by violent winds. Some apprehensions were excited by the appearance in the aerial regions beneath them of a few fleecy clouds, which are not unfrequently the precursors of an Alpine storm. Therefore, after firmly planting their flagstaff, they began their descent on the side of the peak *opposite* to that by which they had ascended, so as to gain the great snow-level above the glacier of Rosenlauri. From the steepness of the incline, and the absence of crevasses, the guides recommended Mr. Spier to sit, and slide down the snow, guiding his course with his alpenstock. He followed their example, and they shot down to the plateau with astonish-

ing celerity. Here much caution was necessary, for crevasses were numerous, and lightly covered with freshly-fallen snow. However, they crossed it in safety, and reached the foot of the Tosenhorn, a lofty peak situated at the confluence of the Rosenlauri and Reufen glaciers, which at this point merge into the huge slope of snow descending from the Wetterhörner.

The whole of this region was a *terra incognita* even to the guides, and they traversed it, therefore, with slow and painful steps. An incautious movement might have committed their bones to some profound abyss. Nor was the descent of the Tosenhorn unattended with danger. The loose rocks and stones which covered the steep descent receded continually from under their feet, and fell in rattling volleys over the precipice; below which, at a fearful depth, were discernible the deep blue crevasses and bristling minarets of the glacier of Rosenlauri.

Quitting the rocks, they found themselves once more upon the hard snowy slopes; slopes with so abrupt an inclination, that for a long time they could only descend them backwards, as if on a ladder, the hatchet being in constant operation. At the foot of one of these the snow suddenly broke away, leaving a crevasse apparently about four yards wide, the opposite border of which was

fully twenty feet lower than that on which they had completely bewildered. What was to be done? All the guides simultaneously offered different counsels while the little company hung, apprehensive and perplexed, on the very verge of the blue gulf below.

At length Jann volunteered the hazardous experiment of leaping across it; and summoning up all his strength he cleared it at a bound. His example lent new hope and fresh courage to the others; and the ropes being detached, the adventurers one by one flew across the yawning chasm and lighted on the smooth surface of the snow below.

Inspired by their success they now prepared to cross a narrow precipice of ice, on which the indefatigable Jann was diligently notching a few steps. But a sudden rumbling sound attracted their attention: the rearward guides drew back the rest with a violent effort; and the next moment down the icy precipice they had been preparing to cross crashed and thundered a mighty avalanche! When it had passed, all drew a deep long breath as they realized the narrowness of their escape. A few steps further, and they must have been crushed beneath the mass!

As soon as the clouds of snowy dust which its thunderous progress raised had somewhat subsided,



GLACIER OF ROSENLAUI

they resumed their march, and for three hours descended a swift succession of walls of snow and ice, reaching the glacier of Rosenloui at five P.M.

The passage of this glacier differs in nothing, it appears, from that of the famous Glacier des Bossons on Mont Blanc, the crevasses being so numerous as to leave only narrow ridges of ice intervening between their azure depths; and as these ridges afford the only means of progress, the eye of the traveller constantly falls on the surrounding gulfs of ice, which, at every step, threaten to swallow him up, should he lose, for one moment, his presence of mind.

To our explorers, weary with their long and arduous march, the transit of this glacier was the most formidable part of their enterprise; and that no accident occurred was due entirely to the extraordinary composure and courage of the guides, who at no time seemed perplexed or alarmed. At eight P.M. they took a final leave of the snowy plains and ice-bound precipices among which their course had lain for seventeen consecutive hours. The danger was all past, and with it the excitement; the descent, therefore, over rugged rocks and fallen pines became very tedious. The Baths of Rosenloui still lay far below them in the valley-depths, where the deep shadows of "the murmurous pines" brooded in a mournful obscurity.

But the veil of night was gradually spreading over the scene ; one by one the village lights were kindled along the slopes ; and at nine P.M. the adventurous little party reached the Baths or Rosenlauri, where for several hours a pleasant flutter of excitement had prevailed ; the flag waving from the snow-clad peak having been discovered by means of a powerful telescope.

The adventurers suffered physically for their exploit : the guides, though veteran chamois-hunters, being laid up with illness ; and Mr. Spier undergoing much pain from the loss of the skin of the face, and from inflammation of the eyes. However, recrossing the Great Scheideck, he arrived in safety at Interlachen on the 10th of July.

VII.

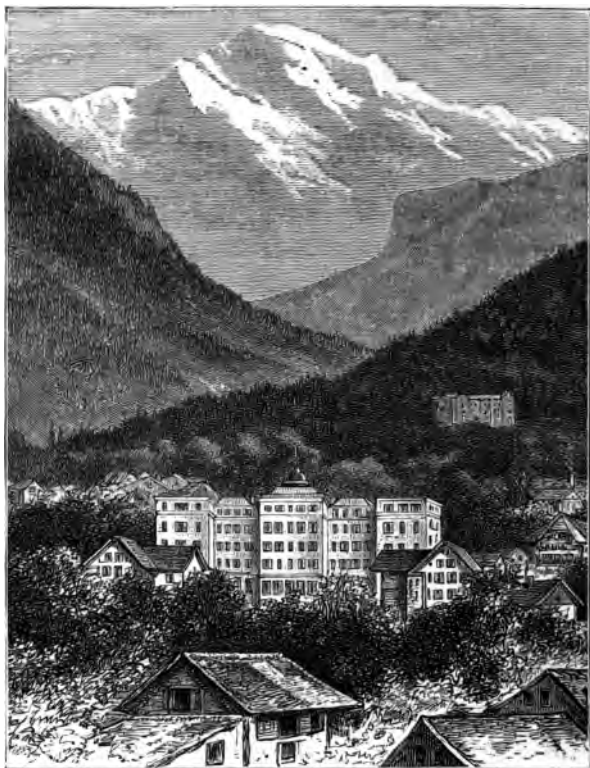
The Mengers Alp.

LAUTERBRUNNEN—GRINDELWALD.



In his picturesque romance of "Hyperion," the poet Longfellow sketches an Alpine scene of much beauty.

"The plain was covered already by the brown shade of the summer twilight. From the cottage roofs in Untersen rose here and there a thin column of smoke over the tops of the trees, and mingled with the evening shadows. The valley of Lauterbrunnen was filled with a blue haze. Far above, in the clear, cloudless heaven, the white forehead of the Jungfrau blushed at the last kiss of the departing sun. It was a glorious transfiguration of Nature. And when the village bells began to ring, and a single voice at a great distance was heard *yodling* forth a ballad, it rather broke than increased the enchantment of a scene where silence was more musical than sound."



INTERLACHEN AND THE JUNGFRAU.

The pilgrim to Lauterbrunnen generally starts from Interlachen, a quaint old town on the Aar, which lies in the centre of some splendid landscapes. The road carries him past the ruined Castle of Unspunnen, which the traditions of the neighbour-

hood describe as the residence of Manfred; and it is not improbable that Byron may have been thinking of it when writing his tragedy. A strange romance is connected with it. The lords of Unspunnen formerly ruled the entire district of the Oberland, from the Grimsel to the Gemmi. Burkard, the last male descendant of this ancient race, had a fair and only daughter, Ida, who loved and was loved by a young knight attached to the household of Berchtold von Zähringen. Needless to say that between this Berchtold and the lord of Unspunnen a "deadly feud" prevailed. In German history the young ladies seem always to have bestowed their affections under similar circumstances; and to have made it their duty to illustrate the truth of the Shakespearian adage, "The course of true love never does run smooth." As the enamoured knight, Rudolph of Wadenswyl, could not secure the lord of Unspunnen's assent to his proposals for the beautiful Ida, he resolved to dispense with it; scaled the castle walls by night, carried off the not unwilling maiden, and wedded her. Ill-omened espousals, followed by years of bloodshed and variance! At length, Rudolph, accompanied by Ida and their infant son, but unarmed, and without guards or attendants, suddenly presented himself before the aged Burkard, and implored his forgiveness. It was granted;

the old man, moved by so much confidence and humility, clasped Ida to his bosom, extended his hand to her husband, and shed tears over his little grandson. Afterwards he decreed that the day of reconciliation should always be kept as a day of rejoicing; and rural games, in consequence, were held at Unspunnen for many years. They were revived in 1805 and 1808, but have since passed into desuetude.

At the hamlet of Zweilütschinen we observe that the road divides into two branches: that on the left enters the valley of Grindelwald, watered by the Black Lütschine; that on the right conducts us to the valley of the Lauterbrunnen, watered by the White Lütschine. We first bend our steps towards the latter.

The valley of Lauterbrunnen, or "Waters-Only," is so named from the numerous streams which fling themselves in silver spray from the summit of its limestone precipices. It is a deep and narrow chasm, penetrating into the very heart of the mountains; and far above it tower the lofty summits of the Mönch and the Silberhorn, the Wetterhorn, the Schreckhorn, and the Schwarzhorn,—“all these sublime apostles of Nature, whose sermons are avalanches.”

Lauterbrunnen is a village of about 1500 inhabitants, whose rustic homes are scattered

along both banks of the Lütschine. It lies 2450 feet above the sea, and is so shaded and sheltered by overhanging cliffs, that, even in summer, it does not greet the sun before seven o'clock, and in the winter not until noon. About thirty mountain-rills descend the sides of the valley in



VALLEY OF LAUTERBRUNNEN.

tiny leaps and falls, and swell the main torrent that rushes through its misty depths; but none of these can compare in beauty with that of the Staubbach, or "Dust Stream," which measures between eight hundred and nine hundred feet in

height, and before it reaches the bottom seems to evaporate in pearly spray.

The torrent is in shape, as it curves over the rocky precipice, "like the *tail* of a white horse streaming in the wind—such," says Byron, "as it might be conceived would be that of the 'pale horse' on which Death is mounted in the Apocalypse. It is neither mist nor water, but a something between both: its immense height gives it a wave or curve—a spreading here or condensation there—wonderful and indescribable."

"It is not noon—the sunbow's rays still arch
The torrent with the many hues of heaven,
And roll the sheeted silver's waving column
O'er the crags headlong perpendicular,
And fling its lines of foaming light along,
And to and fro, like the pale courser's tail,
The giant steed, to be bestrode by Death,
As told in the Apocalypse."

Wordsworth has described the Staubbach as a "sky-born waterfall;" and when the clouds are wreathing the crests of the precipices, and descending even the sides of the valley, it seems as if its fountains were indeed in the upper heavens.

At a chapel nearly opposite the Staubbach a bridle-path diverges; and this, if followed up, will take the traveller to the summit of the ridge that divides the Lauterbrunnen from the Grindelwald valley. Here he sees the former contracted, to all appearance, to a narrow fissure or cleft;

and the Staubbach becomes a thin line of silver, dimly visible through the mist. Rounding the shoulder of the hill, he strikes across a stretch of green meadow-land, with the grand form of the Jungfrau and its snow-wreaths and ice-furrowed sides filling the foreground of the picture. From its huge bulk it seems immediately in front of him, and the whiteness of its snows almost blinds his vision. But perhaps it is seen to even more advantage from an inn near the Lesser Scheideck (*Hôtel de la Jungfrau*), which is planted on an edge of the dark ravine separating the Jungfrau from the Wengern Alp, at an elevation of 5350 feet above the sea-



THE STAUBBACH.

level. Here the spectator may examine the mountain's characteristic features, and the deep grooves that channel its lower precipices, in security; and the spectacle is one which cannot be seen elsewhere.

Let us suppose that he is fortunate enough to witness the descent of an avalanche.

At first his ears are filled with a remote roar, like that of far-off thunder, or falling waters. His attention thus arrested, he fixes his eyes on the mountain, and lo! a puff of white smoke issues from one of its upper gullies; it sinks into a fissure underneath, and disappears; again it becomes visible, but at some hundred feet lower down; the roar is once more heard—a larger jet of smoke—and now a huge mass of ice breaks from the declivity and falls headlong into the gulf below. Keep your gaze steadily bent on the whitened slopes of the Jungfrau, and you may detect the separation of the fragments of ice from the mass of the glacier which produces the thunderous report. Sometimes the great river of ice slides down the surface easily; sometimes it rolls over as if about to launch out into space; but what is most remarkable is the rapidity with which it disappears, splintering up into a thousand atoms, and apparently resolving itself at last into a vast cloud of frozen spray.

Lord Byron wrote a portion of his "Manfred" on the Wengern Alp, in full view of the snowy Jungfrau. A curious correspondence may be traced between some of its images and ideas and the reflections which, at the same time, he was daily noting down in his journal. Thus, we have both in prose and poetry his description of the avalanches of the Jungfrau, and in both we observe a similarity of sentiment and expression.

In his journal he says:—"Heard the avalanches falling every five minutes nearly. The cloud rose from the opposite valley, curling up perpendicular precipices, like the foam of the ocean of hell during a spring tide; it was white and sulphury, and immeasurably deep in appearance. The side we ascended was not of so precipitous a nature; but on arriving at the summit we looked down upon the other side upon a boiling sea of cloud, dashing against the crags on which we stood—these crags on one side quite perpendicular."

In "Manfred" we read:—

"Ye toppling crags of ice—
Ye avalanches, whom a breath draws down
In mountainous o'erwhelming, come and crush me!
I hear ye momentarily above, beneath,
Crash with a frequent conflict; but ye pass,
And only fall on things that still would live;
On the young flourishing forest, or the hut
And hamlet of the harmless villager.

The mists boil up around the glaciers ; clouds
Rise curling far beneath me, white and sulphury,
Like foam from the roused ocean of deep hell."

"The Jungfrau, or Virgin, is so named in allusion either to its former inaccessibility, or to the spotless purity of its snows. The topmost peak was first reached in 1811, by the brothers Meyer, of Aarau ; who again accomplished its ascent in the following year. In 1828 it was escalated by six peasants from Grindelwald ; and in 1841 by M. Agassiz of Neuchâtel, and the late Professor Forbes. We give in another section the narrative of Professor Tyndall's successful ascent.

The descent into the Grindelwald is by no means difficult, though the road is somewhat steep. At one point it passes near a forest which has been swept down by avalanches, nothing but the stems of the trunks remaining—a curious and a melancholy sight.

What is remarkable at Grindelwald, is the intrusion of its two great glaciers, which project into the very bottom of the valley, below the level of the village, and at an inconsiderable distance from its scattered cottages. The south side of the valley is formed by three colossal heights: the Eiger, or Giant; the Mettenberg, which may be described as "the base or pedestal"



GLACIER OF GRINDELWALD.

of the formidable Schreckhorn ; and the Wetterhorn, or Peak of Tempests ; and it is in the interspaces of these mountains that the two Grindelwald glaciers have been accumulated. They issue primarily from the vast sea or basin of

ice which fills up the table-land and higher valleys of the Bernese Alps; and as the masses above undergo continuous augmentation, are forced downwards below the perpetual snow-line, where they gradually dissolve. Bordered by woods of fir, and pushing forward into green pastures, they present a very striking appearance.

VIII.

Crossing the Tschingel Glacier.



THE excursion we are about to describe is one that, some years ago, was much rarer than it is at present, and consequently much more of an adventure. The Alps have of late become a favourite resort of tourists, and have been mapped out and explored in their minutest recesses, until there is scarcely a peak which has not been trodden by presumptuous feet, scarcely a cavern which has not re-echoed the triumphant British cheer. So vast a fund of experience has been accumulated, that Alpine travelling presents little more risk of peril to life or limb than a journey from London to Edinburgh by the Limited Mail. But thirty years ago this could not be said. Most of the summits of the Alps were still virgin. Mountain-climbing had not been degraded to the level of a fashionable amusement. And the passage of unknown glaciers and the ascent of unexplored

heights was still attended with very considerable danger.

The anonymous traveller, therefore, who, in the summer of 1844, undertook to cross the Tschingel Glacier, undertook what was then an enterprise of an exciting character ; and the complacency with which he records the details of a comparatively ordinary achievement, may be freely forgiven.

The head of the beautiful valley of Lauterbrunnen, which Longfellow has celebrated so finely in his prose-poem of "Hyperion," is enclosed, as everybody knows, by a part of the great chain of the Swiss Alps, the summits of which shine ever coldly in their shrouds of snow, the sides of which are ever deeply incrustated with masses of ice. A pass of considerable elevation leads from the valley at right angles to it, and descends upon the village of Kandersteg through the Oeschinen Thal. Higher up the valley, and stretching some thousands of feet above it, lies the great Tschingel Glacier. To visit, and if possible to cross it, was the object of our nameless adventurer.

A walk of a few hours brought him and his companions to their resting-place for the night. It carried them past the famous fall of the Staubbach, the waters of which, as they tumble

headlong from the height, are dissolved into glittering diamond-dust; and past that of the Schmadribach, which is surrounded by the most picturesque accessories. By a rude path, which soon became hardly discernible, they ascended a thousand feet above the valley; sometimes in the shade of fir-trees, and sometimes in the musical sound of the mountain-torrents that leaped and brawled on their way to the Lake of Thun. Then they came upon a little châlet, erected on an open piece of turf, the residence of a herdsman, who tended a few cows while they enjoyed the summer-pastures. Here they were accommodated for the night in a hay-loft; and rude as was the shelter, they slept soundly.

The morning proved exceedingly unfavourable for the excursion they meditated. So dense a fog prevailed that they could see only a few paces in advance. They waited for some hours, in the hope that it would clear away; but the hope was vain, and at last they resolved on pressing forward. Probably they would have come to a different decision if they had known more of the dangers of the route; but as the chamois-hunters who acted as their guides declared their willingness to set out, there seemed no occasion to delay.

For some distance the track lay along a steep declivity of the Steinberg Alp, but most of the

precipice was hidden by the mist. Crossing several streams which, owing to the abruptness of their descent, resembled cascades, and filled the air with the sparkle of their spray and the murmurs of their music, they came upon a field of snow, the remains of an avalanche of considerable size. This they crossed ; and then, for about a quarter of an hour, they climbed a hill formed of the wreck and refuse brought down by the waters from the heights above. Thus they arrived at the lower extremity of the glacier. They found it covered in a great measure with snow, and that it sloped at a considerable inclination. Some traces of a lateral moraine were visible. The glacier had been crossed early in the year, but in the interval it had undergone much serious change. The sloping nature of the bed along which the huge river descended had had its usual effect upon the ice. In its advance it had cracked through its own heavy pressure, and large impassable chasms, or crevasses, intersected its surface, through some of which ran small streams of the purest water.

By following up the crevasses to their head, however, the explorers contrived to evade the largest, and others they crossed without any special difficulty.

Meantime the fog had been increasing in density, and " a council of war " was summoned to decide

on the plan of the campaign. There are two ways of reaching the summit of the glacier: the one, by following its sinuous course, and passing under the Gletscher, would have taken them by a sweep into the great snow-plain at the top; the other, by climbing the crags which skirt it and limit its expansion, would lead them more directly and rapidly to the same spot. The density of the fog, and the delay at starting, seemed to require them to hasten their expedition; and, accordingly, having sent one of the party ahead to reconnoitre, they determined on following the second, which is both the more rapid and the more dangerous route. The chamois-hunters call it "the step of the Tschingel."

Leaving the glacier, they mounted for some time an acclivity formed by a downfall of shale and mud. It was so steep, that they were compelled to continue the ascent without pause, to prevent themselves from sliding backwards. In this way they reached a point where it seemed as if they must have recourse to Hannibal's somewhat mythical experiment of destroying the rock with vinegar. The Tschingel Tritt, which frowned before them, though only thirty feet high, *looked* as impassable as any precipice which reality or fiction could conjure up. It is scarcely an exaggeration to describe it as com-

pletely perpendicular; and along its summit runs a narrow ledge, in face of the upper precipice, on which only one person can make secure his footing at a time. Below lay the slanting hill of shale, where they maintained their position with some difficulty by the aid of their alpenstocks. They were inclined to retrace their steps; but a little reflection showed that the descent would be much more hazardous and difficult than the ascent, on account of the softness of the material, which offered no hold to the traveller's feet. No; retreat was impossible, and their motto, of necessity, was Mr. Longfellow's somewhat ungrammatical "Excelsior!"

Their position, it must be admitted, was one of some danger. The hill on which they stood narrowed towards its summit like a pyramid, and at the top did not exceed a few yards in width. So that if, in climbing the precipice before them, they chanced to slip, their fall would not be immediately upon the hill, but into the depth below, an abyss of many hundred feet. Here and there, from the face of the precipice, projected crag and boulder; of these, some were only a few inches in size, affording a very precarious footing. Others were of more considerable dimensions. In stepping upon one of the latter, the younger guide, perceiving that it trembled under

him, struck it several times with his foot. It quivered, it cracked, it yielded. It fell into the abyss below, rattling and resounding whenever it clashed against the side of the rock, until the din it made was lost in distance long before it reached the bottom of the abyss. The adventurers gazed at each other for a moment, and read in every countenance an expression of awe and alarm. If another stone gave way, or if they missed their footing on the dank and dripping ledges, or if the influence of the dizzy height unmanned them but for a moment, what would be their fate?

They had passed the Rubicon, however, and had no choice but to proceed. In this life, indeed, when two alternatives offer—going forward or going backward—the latter is usually attended with the greater dangers. Safety generally lies in pressing onward. Difficulties seem less formidable, the nearer we get to them; and even the ascent of the Tschingel Tritt did not appear so terrible to our travellers while they were engaged in accomplishing it, as afterwards when they looked back upon it, and could realize the height of the precipices they had scaled, and the depth of the chasms they had crossed.* In fact, each was too busy in attending to the secure planting of his own footsteps, to take much heed of the

* It is now regarded as a very commonplace affair.

obstacles before and around him. But when the foremost had reached the summit, and were unable to watch the others in their perilous course, every moment beyond the time sufficient for their re-appearance filled them with the gloomiest apprehensions.

After what had been successfully achieved, what remained to be done, difficult as it was, lost much of its terror. And, besides, if retreat had previously been dangerous, it had now become impossible. They advanced, therefore, with more alacrity, though not with less caution, and soon gained a narrow oasis of greensward, where the sight of a few "forget-me-nots" * cheered them with visions of home and memories of old remembered faces. Some of them they gathered, feeling they had a vague kind of right to them. They were wasting their fragrance, at all events, on the icy air, and fell rightly enough as a prize to the hardy explorers.

The pleasant knoll of turf was soon left behind; and after climbing over alternate beds of shale and rugged rock, our travellers found themselves among the débris of another avalanche. Here the slope was steep and slippery, and only by strenuous exertion could they keep their footing. As it

* So in the original ; but we are inclined to suspect that our travellers, in their haste, mistook for the *myosotis* the little blue flowers of the *gentianella* (*Gentiana lutea*), which abound among the Alpine snows.

was, two of them fell ; but after receding a few yards, recovered themselves by the help of their alpenstocks. For about half an hour the ascent was continued, and then they suddenly mounted upon a vast plain of frozen snow, which spread before them in all its dazzling and unsullied whiteness, like a sea of foam. As yet, it bore not the footmarks of adventurous man. Only the winds of heaven had passed across it ; and these had left no apparent traces of their path. Words cannot do justice—the phrase is an old, but a true one—to the mingled beauty and sublimity of the scene, which, in its majestic splendour, seemed almost to belong to another world. On the right, the vast aiguilles of the Blümlis rose bare and barren, their sides too precipitous to retain any vesture of snow ; on the left, the gentler and more gradual slopes of the same mountain shone with the cold, pure whiteness. Behind, towered the height of the Gletscher and the summit of the Jungfrau ; below, the clouds floated in the still air.

For a few moments the travellers paused, impressed by the utter loneliness and silence, and feeling as if they had reached the threshold of an unknown region, and were for ever separated from the active, breathing world in their rear by a barrier of mist. But the solitude and the silence

were suddenly interrupted : a herd of chamois, fourteen in number, started up from a neighbouring hollow, and began to ascend the black precipices of the Blümlis with an astonishing celerity. When they were fairly out of rifle-range, they turned round, and stood to look at the adventurers, almost as if mocking at their inability to pursue and overtake them ; then, having satisfied their curiosity, they resumed their rapid flight, and disappeared amid impenetrable fastnesses.

And now, says our chronicler, began the real labours of the day. The stratum of snow which covered the glacier measured several yards in depth. The surface had slightly thawed beneath the sun's warm rays, though the atmosphere continued intensely cold. It was weary work ploughing through the loosened snow, which clung to the feet, and acted like a drag. The greater their exertions, the more they were retarded by the *névé*, which yielded immediately they trod heavily upon it. In this manner they continued their laborious progress for an hour or more ; and yet the summit of the inclined plane seemed no nearer.

The whole party suffered severely. The higher they ascended the slopes, the softer they found the snow, until they sank knee-deep into its crumbling mass. The rarity of the atmosphere

told upon some of them, for they had now attained to a very considerable elevation. The feet being benumbed, and circulation impeded, the blood rushed to the head. "My face," says one of them, "became purple; I was deaf; my sight in a great measure failed me; and I plodded on mechanically, scarcely knowing or caring whither I went. As we descended on the other side, these sensations disappeared with all of us about the same place. At the summit, the hail fell with some violence for a while, and it rained the whole way down. Such is the general character of the 'land of mist and snow.' After traversing nine miles of it, we came upon the uncovered glacier. It was still a gently-sloping plane; but now it inclined towards the valley opposite to that by which we had first ascended. Thus the form of the whole glacier resembles a saddle bestriding a gorge of the Blümlis."

The inclination being less, the crevasses were necessarily narrower; but they were not less treacherous, most of them being partially covered with snow. In one or two instances the Alpine travellers felt the edges give way as they crossed, where to all appearance the surface was that of solid ice. But by carefully sounding their way with their iron-shod alpenstocks, they escaped all danger. They rejoiced, however, when they left

this side of the glacier, and took their way along the range of rocks which formed its border. After a walk of about half an hour, they came in full view of the lower reach of the huge river of ice, where it empties its solid mass into the bosom of the valley, and gradually disappears among the green shadows of the pine-woods. Looking forth upon the magnificent spectacle, our travellers felt tempted to exclaim,—

“Earth hath not anything to show more fair.”

They protested that they had seen nothing equal to it in the great Mer de Glace at Chamounix, in the famous glaciers of the Grindelwald, in the huge glacier of the Rhone, or in the ice-rivers that lie in the neighbourhood of the Orteler-Spitz. Masses of ice, such as we read of in Coleridge’s “Ancient Mariner”—“mast-high,” though not “as green as emerald,” but of the deepest and most beautiful azure imaginable, as if they had taken their colour from the summer-heavens—formed a steep and lofty rampart, closing up the mouth of the valley. Here the glacier seemed to have been disrupted by some internal convulsion, and all around rose a forest of pinnacles and towers, and crags and obelisks, in the strangest, wildest, most picturesque confusion. The grandeur of the scene was enhanced by the sounds of thunder


which occasionally rolled across it, as from the adjacent heights the avalanches fell in headlong ruin.

Our travellers had still a considerable journey before them, but the descent did not occupy much time. They duly reached the valley; for about two hours made their way through the wild beauties of the Gasteren Thal; and finally reached the village of Kandersteg, triumphant, but weary.

It remains to be added, that the passage of the Tschingel is now of common occurrence, and Alpine explorers have ceased to regard it—for familiarity breeds contempt—as a very dangerous or difficult enterprise. This does not detract from the merit of those who led the way.

IX.

The Allelein-Horn.

HE vast snowy ridge which, striking due north from Monte Rosa, divides the valleys of Saas and Zermatt, throws off the huge Görner, Findelen, and Täsch glaciers, which all descend, as we have seen in a preceding chapter, to the head of the romantic Zermatt valley. Across this ridge lie three passes—the Weissthor, the Adler, and the Allelein; and its termination is marked by the Allelein-Horn, which here turns suddenly westward, and forms the northern boundary of the Täsch glacier. The Allelein-Horn rises 13,235 feet above the sea-level. Its ascent was first accomplished in 1856. A striking and picturesque peak, it forms a conspicuous landmark for all the lower country round Zermatt and Saas; and in 1860 it was once more the object of adventurous attack, being escaladed by Mr. Leslie Stephen and some friends. Their predecessor, Mr. Ames, had ascended from the

Allelein Pass, and by the Täsch glacier. Mr. Stephen and his companions crossed from Täsch to Saas by a more direct but also a more difficult route, passing along the north-west side of the mountain to the upper slopes of the Fée glacier. We proceed to describe their experiences.

The party consisted of Messrs. Leslie Stephen, Short, Jacomb, and Fisher, and four guides.

They started from Saas at half-past five on the morning of the 1st of August. "The light mists which were driving up the valley hid the mountains, except when the top of the Mittag-horn occasionally looked down upon us through the clouds. Suddenly, some one pointed to what looked like a sheet of silver, gleaming at an almost incredible height through the mists. It is always strange to observe how much the apparent height of a mountain is increased when it is looking over clouds. I should hardly have believed," says Mr. Stephen, "that any mountain in the Alps could rise so high above us as the glaciers which were now shining down upon us from the mists; and yet I remembered that, in the summer before, I had stood upon the summit of the Dom,* and seen these very glaciers lying almost immediately beneath me at the foot of a

* The Dom is the highest of the Mischabelhörner, in the Pennine Alps, 14,985 feet; first ascended by the Rev. J. Llewellyn Davies in 1858.

sheer precipice some ten thousand feet high. It is true that, at the same time, we had seen on one side the Lago Maggiore, twenty miles off, lying like a deep green pond below us, and unknown lakes and plains stretching far away beyond it. By turning our heads, we looked upon a purple sheet of haze, which concealed the Lake of Geneva. I had scarcely time to remember this, when, in almost one instant, the mists that had surrounded us were swept away, and, as if by magic, the whole glorious semicircle of peaks, from the Allelein-Horn to the Mischabel, sprang before us. All that unrivalled sweep of glaciers, and every rock and cliff that rise from them, shone out instantaneously, without even a shred of mist to conceal their beauties. I have scarcely ever seen a more startling effect, even in the Alps."

A prospect so novel and so magnificent inspired our travellers with unconquerable vigour. Forward they pressed, with swift feet and steady, and ascended the ridge of rock which divides the Fée glacier into two tongue-like masses, and terminates in the "Gletscher Alp." Here, at about nine o'clock, they paused to rest and refresh themselves, and then started across a vast snow-field to the foot of the Allelein-Horn. The snow was very deep, and therefore wearisome; the

acclivity was considerable, and the glacier furrowed with long, broad crevasses. Snow-wading, as the guides aptly call it, is a laborious process. Snow to the right of you, snow to the left of you; snow above, and around, and below you, reflecting the sun's rays with pitiless glare; snow crumbling into your pockets, and melting in your boots;—nothing more wearisome can well be imagined. And as the snow-fields rose up against the mountain, and crevasses became broader, deeper, and more numerous, the difficulty of progression increased, and something of that glow of excitement passed away which at first had animated our adventurers.

They were now roped together in two parties, and took it in turn to lead the way. The guides were stalwart men, and thoroughly acquainted with the dangers of Alpine travelling; and one of them—Franz Andermatten—was as merry as he was strong, and did his best to keep up the spirits of his companions. So at two o'clock they succeeded in gaining the summit of the pass, from whence they looked down on the lower reach of the Täsch glacier. Mr. Leslie Stephen proposed to descend to this glacier by the rocks beneath; but Franz declared they were impracticable, and insisted that the proper course was to ascend the Allelein-Horn on their left hand,

and from its summit strike down to the very head of the Täsch glacier—in other words, to the col of the Allelein Pass. Whatever reluctance was felt by the travellers Franz Andermatten's impetuosity rendered nugatory ; he pulled at the rope, and started off like a steam-engine, with his small train of English explorers and Savoy guides behind him. Complaint was useless ; one long slope of snow extended to the summit, and up that slope they were mercilessly hauled, without halt or hesitation. At half-past two, breathless but triumphant, they were sitting round the little cairn which Franz had erected on the occasion of his first ascent with Mr. Ames ; and loosing the ropes, which had troubled them not a little in their swift compulsory ascent, they were at liberty to enjoy the prospect of peak and glacier, rock and snow-field, precipice and valley, which swept around them.

What is the use of going up a mountain ? This is a popular question ; and Mr. Leslie Stephen offers what may be regarded as a satisfactory reply. Apart from the glorious exercise and excitement, he says, of climbing a mountain, it would be well worth any trouble to see such views as those which can only be seen from the highest peaks. No doubt there are many views in the lower country more capable of being made into pictures.

The vast cloudy panorama stretched below your feet from an Alpine summit, makes an impression upon your mind which can be described neither on canvas nor in writing. It gives a most exhilarating sense of unrivalled sublimity, which could no more be rendered on canvas than one of the scenes in "Paradise Lost." It is the constant presence of scenery so impressive and indescribable which gives to Alpine exercise such absorbing interest. Most people, says Leslie Stephen, probably pass as much time in thinking about their dinner as they do about the scenery; but the presence of the scenery, though its beauty may not be so directly a subject of thought or interest during your toils and your hunger, counts for more in producing pleasure than it does even in such pursuits as fishing or shooting. As for the theory that you should walk ten miles a day and meditate on the beauties of nature,—poets or painters may appreciate it, but it does not commend itself to a man with a fair allowance of physical energy. A man can no more feel the true mountain spirit without having penetrated into the very heart and ascended to the very summits of the mountains, than he can know what the sea resembles or is by standing on the shore. "It is just as easy to evolve the idea of a mountain-top out of the depths of your moral

consciousness as that of a camel.* The small patch of glistening white, which you are told is a snow-slope, looks very pretty out of the valley to any one; but it will look very different to a man who has studied it only through an opera-glass, and to one who has had to cut his way up it step by step for hours together. The little knob which your guide-book says is the top of some unpronounceable 'Horn,' will gain wonderfully in majesty when you have once stood upon it, and felt as if you were alone in the midst of the heavens, with the kingdoms of the earth at your feet; and if you meditate till doomsday on the beautiful lights and shades and the graceful sweeps of the mountain-ridges, you will not be one bit nearer to the sensation of standing on a knife-like ridge, with the toe of your boot over Italy, and the heel over Switzerland."

Such is Mr. Leslie Stephen's defence of mountain-climbing, and it must be taken *quantum valeat*. It may be thought that he somewhat exaggerates the supposed magnificence and beauty of the panorama visible from the mountain-top. Oftentimes the prospect must be obscured with cloud and mist; in all cases, the details must be vague and uncertain; and when the peak is one

* As the German philosopher is said to have done.

of a mass of peaks, and not an isolated one, the general character of the view will suffer, we suspect, from monotony. In fact, it may be taken for granted that the admiration felt by the traveller is due in no small degree to his sense of dangers experienced and difficulties overcome. He thrills with the joy of victory, and from this joy everything around him gains in radiance and splendour. As mountain-climbing, however, calls into requisition some of man's finest qualities—his courage, his resolution, his endurance, his persistence of purpose, his self-control—and as it is well that these qualities should be cultivated and developed, it may reasonably plead a justification, and deprecate the censure which is sometimes lavished upon it.

From the Horn to the top of the Allelein Pass runs a huge buttress in a southerly direction. The western side descends with many long and abrupt snow-slopes to the Täsch glacier. On the eastern side, the snow, which slopes steeply from the ridge, soon terminates at the brink of rocky and precipitous cliffs which probably sink to the higher level of the Allelein glacier, though to the traveller they seem to disappear in a great lake of mist. Along these rocks Franz Andermatten proposed to lead the way; but he was overruled

by the other guides, and it was determined to try the buttress already mentioned.

This said buttress is compared by Mr. Leslie Stephen to the roof of a church tilted up at a steep angle, the tiles on either side representing the snow-slopes, which on the east reached only a short way to the edge of the cliffs, and on the west stretched much further to a level and easy glacier. Alpine travellers consider it light work to traverse an *arête*, even though inclined at a considerable angle, so long as they can keep on its back-bone, with a slope on either side. It is like walking along the ridge of a church roof. But when the roof suddenly breaks in its elevation, as at the junction of nave and chancel, or when the path is interrupted by an irregular series of spikes, the difficulty is considerably increased. In the case of Mr. Leslie Stephen and his companions, the spikes were represented by sharp spires of impracticable rock, which compelled them to descend to a snow-slope, decidedly more abrupt and treacherous than ordinary roofing-tiles. They crept down towards it over a few firm rocks; and Franz, selecting a big stone, tested the condition of the snow. They found it hard and old beneath; but a cake of comparatively new snow, a few inches thick, was attached to its surface by congelation. The stone,

as it fell, detached part of this cake from the snow beneath; the part detached slid down, dragging more after it, and in a moment a broad sheet of it was pouring down with a low hissing sound over the rocks below, leaving bare a surface of hard *névé*. Of course, had our explorers rashly trodden upon it, their fate would have been the same, and they would eventually have fallen headlong over the cliff. As it was, with much care and wariness they planted their feet as deeply as they could in the firmer snow beneath; then thrusting their alpenstocks vertically into it, they secured a firm anchorage in case of an avalanche of snow descending from above. It was very slowly and very cautiously they moved forward, deriving additional security from the fact that they were roped together; and in due time all stood upon the ridge below the protruding rocks. Here they met with another difficulty: the ridge was suddenly interrupted by a steep descent, just like the break between the roof of the nave and chancel of a church to which we have already referred. As it was impossible to follow it, the travellers resolved to strike down the long snow-slopes on the side of the buttress to the Täscli glacier.

For some distance the descent was moderately difficult. A huge rocky rib, with a channel or

kind of gutter in the ice by its side, ran down the mountain's flanks. Cutting a few steps in the gutter, and clinging firmly to the rocks, they made tolerable progress; crept carefully to the end of the rock; and then, perched upon a narrow ledge, took into consideration what was next to be attempted.

"We were looking down a blank wall of ice, inclined at some 45° , and reaching without intermission to the glacier, at a depth of several hundred feet below. I knew, by very disagreeable experience, that it would probably take several hours to cut steps down to it; and yet, near us, the ice showed no snow on its surface to help us. It was already late, the sun was near setting, and the mists were getting thicker every moment. Soon, even the glacier below us was entirely concealed. I was making some hasty reflections as to the comfort of passing the night perched like a jackdaw on the side of a cliff, with dinner and coffee some thousands of feet below us."

After some debate, the party decided on the following plan. By fastening together their two ropes, they obtained a length of about a hundred feet. Moritz Anthonmatten, one of the guides, then fastened one end round his waist, and was lowered by the rest of the party to the full extent of the rope. But even then he could obtain

no foot-hold. He quickly cut, however, a couple of steps in the ice, and then throwing off the rope, cut a line of steps in a horizontal direction to a part of the slope where the snow seemed deeper. Another guide was lowered in the same way, and he assisted in completing the steps. Then, one by one, the travellers were let down—perfectly helpless bundles—sliding along the vast expanse of ice which stretched into the mists at their feet, as if impelled by some irresistible necessity.

On reaching the steps, Mr. Leslie Stephen cast off the rope, and hastened to the end of the line, where, much to his satisfaction, he found the snow considerably deeper. Then he turned with some curiosity to see how the "last man"—the veteran guide, old Peter Tauggwald—would descend. After letting down Franz, he hauled in the rope, doubled it, and coiled the loop round a projecting point of rock; hanging on to it, and every now and then using his heavy axe as a kind of ice-anchor, he lowered himself to the end of the rope. Meantime, Franz had rapidly cut a few notches upwards to meet him. He unhitched the rope above, descended this perilous staircase, and the two guides quickly overtook the rest of the party along the laborious pathway, which it took long to cut, and but a short time to follow.

By the time they were all together, the snow was once more tolerably firm and deep. Accordingly they roped themselves again together; old Peter in front, with his huge axe, like that of some Norse sea-king, held across his knees; Leslie Stephen behind him, resting his boots on Peter's thighs, and thrusting his alpenstock into the snow on one side. Similar positions were taken up by the rest of the party, until they all formed a compact train, with alpenstocks alternately to right and left, prepared for a smart *glissade*. At the word "Vorwärts!" away they went, yelling lustily, and shooting down the soft snow into the gloom before them.

"Once," says Mr. Leslie Stephen, "the lumpiness of the snow disconnected the train, and we pulled up all in confusion in a heap of deep snow, with the rope dragging us all kinds of ways. We joined on again, and, with discordant howls of delight, shot away like lightning down the slope. This time we brought up all safe at the foot, and below the mists, amongst huge lumps of half-melted and half-frozen snow, which had, no doubt, come down the couloir in avalanches. Our boots and pockets were filled with snow; we had been bumped, and bruised, and cut, and had scraped the skin off our hands; but we were all in a state of absurd exhilaration at our sudden

escape from our difficulties, and at the smooth plain of snow which now lay before us. We jumped up, gave ourselves a shake, and started across it at the double. It is not exactly usual to cross a glacier at a run, however smooth it may be. We wished, however, to make up for lost time, as it had taken us over four hours from the top of the Allelein-Horn, which was still close above us. We were now all in the highest glee, and the pace we went soon brought us to the edge of the snow, on to the Alps, and within sight of chalets, and within sound of the cow-bells below."

The dangerous and difficult portion of their enterprise was now over. What remained might have seemed formidable to the ordinary pedestrian, accustomed to beaten paths, highway roads, and "easy gradients," but to Alpine travellers it caused not a moment's uneasiness. The sun had set before they entered the fragrant pine-woods on the side of the Zermatt valley, and the shades of night were gathering fast. But they pressed forward along an uneven and irregular foot-track skirting the side of a small aqueduct of irrigation which traverses the wooded depths. It was a path with erratic and strange propensities,—diverging this way and that, ascending sharp hills, floundering down steep descents, and, at night-

fall, completely impracticable for unaccustomed feet. But though it wearied, it did not perplex or overcome our adventurers. And, indeed, how could anything on tolerably level ground arrest the progress of men who thought nothing of climbing precipitous icy steeps and sliding down vast declivities of ice? One might as reasonably expect an adept at conic sections and logarithms to stumble at the "Pons Asinorum" in the first book of Euclid!

Hence we have nothing more to do than to record the safe arrival of Mr. Leslie Stephen and his companions at the inn of Zermatt; and their successful accomplishment of the by no means insignificant feat of crossing the Allelein-Horn. It was well done; and one cannot help enjoying the cheery narrative in which Mr. Leslie Stephen has described it.*

* "Vacation Tourists and Notes of Travel in 1860." Edited by Francis Galton. London: 1861. See pp. 264-281.

X.

The Schreckhorn.

"This most steep fantastic pinnacle,
The fretwork of some earthquake—where the clouds
Pause to repose themselves in passing by."

BYRON.



THE Schreckhorn, in the Swiss Oberland, is one of the three huge mountains that enclose the Grindelwald valley on the south; the other two being the Eiger, or "Giant," at the lower end, and the Wetterhorn, or "Peak of Storms," at the upper end. The base or pedestal of the Schreckhorn is locally known as the Mettenberg, or Middle Mountain. Between these huge mountains roll downward the two glaciers of Grindelwald, having their origin in the vast dreary ice-ocean which occupies all the upper region of the Alps.

In 1857 the Schreckhorn was ascended by Mr. E. Anderson, accompanied by two guides, Almer and Bohren, and two porters, each carrying one of the long baskets of the country, wide-mouthed

and narrow-bottomed, attached to his shoulders by hooks or cords. He set out from his hotel at ten o'clock in the morning of the 5th of August. He describes his attire minutely. It consisted of white flannel cricketing trousers, sleeve jacket of the same material, white linen coat, flannel shirt, white felt wide-awake hat, stockings underneath socks of the thickest worsted, and double-soled blucher boots, well studded with nails. One of the porters carried a ladder; Almer, a stout rope and a heavy common wood axe; and Bohren, his knapsack and ice axe.

For some time their course lay in the direction of the Great Scheideck, skirting the broken and irregular edge of the Lower Grindelwald Glacier, and soon striking into the gorge down which the ice-masses of the Great Glacier slowly force their way. Near the upper end of the frozen river a sound of waters fell upon their ears, and they quickly found themselves in the midst of a scene of wild beauty. A large cascade, and several small ones, tumbled in broken silver from the summit of the cliff, and sped with thundering din amongst the rocks on their passage to the riven glacier below.

The stream from the principal waterfall was crossed by means of the ladder; and after some rough walking and rougher climbing, they rounded

the cliff, and reached a place on its summit which had some pretension to be considered level. A few paces further, and they reached a cluster of boulders, where the guides halted, and pointing to an adjacent cave or hollow, indicated that they had arrived at the "Chief Hotel."

This cave or hollow, we may here remark, was used by Mr. Wills when he ascended the Wetterhorn in 1854. He describes it as "a low, arched cave, formed by two or three rocks, one of which, somewhat hollow on the under side, had fallen curiously upon the others, so as to make a kind of vaulted roof. Two sides were supplied by the boulders on which it rested, and in the course of time the earth had so accumulated about them that all round their bases they were hermetically sealed, and the ground outside was two or three feet higher than the floor of the cavern. Mould had also gathered about their points of contact, so that the holes and crannies were filled up, and the shelter was complete."

Here Mr. Anderson snugly ensconced himself, and after a good meal and a cup of coffee, prepared to take his rest. About one in the morning he was roused by the pealing thunder, and thrusting out his head, discovered that the rain was falling heavily. And all night, and all the next morning, continued the pitiless storm, much to

the discomfort of the little party pent up in the narrow cave. It did not cease until late in the afternoon, when they all turned out to survey the prospect. To the right rose the Wetterhorn, to the left the Schreckhorn, and in front a rocky barrier which had to be stormed and carried before they could continue their route. It was determined that this part of their task should be effected at once, and a spot gained near the point where they would take to the ice. After industriously scaling the barrier, they found an overhanging rock which afforded some slight shelter, and there they resolved to pass the night. The guides raised a small screen of stones and snow to keep off the wind, and a large fire soon spread a cheerful blaze around.

“As,” says Mr. Anderson, “I did not feel any inclination to sleep, I sat up for some time, with a blanket round me, smoking my pipe, and musing on my strange situation.” No doubt it was calculated to awaken many a deep emotion. To the left rose the huge bulk of the Schreckhorn. When a cloud less dense than others passed before it, its outline became dimly visible, and at the same time showed that the moon was shining brightly behind it, her beams penetrating the thin cloudy veil, and spreading a silvery tint over snow-field and glacier. In front could be seen the noble

outline of the Niesen; and, as if suspended in mid-air, a small speck of light, the reflection of the moon, glanced on the calm surface of the lake of Thun. With arrowy speed flew past the clouds, gradually becoming thinner and fewer, until by degrees the stars appeared, the rain ceased, and the orb of night shone resplendent in a cloudless sky. The Schreckhorn in one direction, and the Wetterhorn in another, were revealed with the utmost clearness of outline, the snow around them shining like frosted silver; while the far-off lake of Thun quivered with pearly lustre.

At half-past six, Mr. Anderson resumed his adventure. Above him stretched a long perpendicular rocky range, with the glacier resting on its summit, and forming a continuation of its front, but nowhere projecting beyond the edge, because as soon as the glacier-motion carried the ice *over* the edge, it broke off from the main body and plunged down the precipice. Mr. Anderson was fortunate enough to see the fall of one tremendous mass, which thundered down, striking projecting points of rock, and turning and bounding until it reached the depths below, where it shivered into a thousand fragments, and threw up a perfect cloud of icy spray.

“The cliff,” says our traveller, “seemed to bar

further progress; but at one point there was fortunately a depression over which the glacier flowed, and from that point we soon made our way to the ice above, where a striking scene awaited us. On our right, deep below, ran the main channel of the Great Glacier; on our left, far above us, and shutting in the view, was a long jagged ridge of huge ice pinnacles which gradually descended, bearing to the right until it terminated at a point abutting on the main channel, the portion of the glacier upon which we were standing being magnificently crevassed. To the before-mentioned point we directed our steps, but the crevasses were so large and numerous, that it was extremely difficult to thread our way amongst them, and it somewhat taxed Almer's sagacity to find a route. Several times we had to abandon the path we were following and try another; but by perseverance we arrived at our point, and shortly afterwards reached the *névé*."

Here they found themselves in the centre of a valley of snow, and, looking up, Anderson saw, to his surprise, that instead of a single peak, as the Schreckhorn had always appeared to him to be, it consisted of two distinct peaks, one higher than the other. He, of course, determined to ascend the higher, which is now known as the Greater Schreckhorn; and made for a mass of bare rock,

a conspicuous object in the distance, which seemed a spur of the Schreckhorn, projecting like a buttress from the accumulation of snow above and around. On reaching it, they found that it was really an extended rocky cliff, with *debris* and fragments heaped up at its base. To the right stretched a steep wall of snow, forming one side of a great crevasse or *bergschrund*, the opposite side of which was much higher, and rose in an exceedingly steep acclivity. Thus they were entirely cut off from the peak by this profound crevasse.

For some time the difficulty before them seemed insuperable ; but after a close and careful inspection of the whole length of the crevasse, Almer discovered a point where, he thought, a passage might be attempted ; and the ladder being raised, Anderson and the two guides mounted to the edge. Scarcely had they done so, when an avalanche of fresh snow thundered down the slope on the opposite side ! Had they crossed, they must have been engulfed in it. Happily, the great mass of the avalanche fell into the crevasse, while the lesser portions poured over them like water. When Mr. Anderson felt it was coming, he struck the handle of his ice-axe into the snow and held on, crouching on his knees as low as possible. The rush of snow blinded him, and at

one moment he thought that it would bury him and his companions. However, the danger passed, and, shaking off the snow, they ran down the ladder with all speed. Evidently it was impossible to cross the crevasse; and Mr. Anderson was compelled to abandon his design of ascending the higher peak.

He turned his attention to the lower, and, crossing a small valley, he and the guides proceeded to climb the opposite rise, narrowly escaping the rush and sweep of another avalanche. Then they began to cut steps in the icy slopes leading to the base of the peak, which, owing to its perpendicularity, was comparatively free from snow. Its angular grooves affording good hold for hands and feet, our sturdy adventurers escalated it without much difficulty, and attained its summit at three o'clock in the afternoon. Justifiably proud of their success, they planted their flag on the airy height, and raised a cheer of victory. Then they rested a while, intent upon the surprising features of the mountain-world below.

When thoroughly refreshed, Mr. Anderson suggested that they should descend the opposite side of the peak, and proceed to Grindelwald by the Lower Glacier. The guides at first thought such a course impracticable, but eventually agreed to it, and the whole party were soon in motion.

Steep and laborious was the first portion of the descent, and great was the caution necessary in passing the piles of broken rocks that had accumulated wherever they could obtain a vantage-ground. Bohren closely inspected them, and kicked over any fragment that appeared dangerous. As it went plunging into the depths below, it frequently set others in motion, with the result of producing an avalanche of rocks, the din of which was repeated by every echo. Mr. Anderson, whenever the abruptness of the rock prevented him from walking upright, placed his hands behind him, and crawled down on all fours with his back to the rock—a mode of progression that he found both safe and easy. On coming to a place a little less steep, Bohren walked erect, and, looking back, encouraged his employer to do the same, observing, “One never slides upon granite, sir ;” an assertion which he immediately disproved by coming down on his back with a very convincing fall.

During his descent, Mr. Anderson saw Nature “in her most gloomy and sterile aspect.” Nothing but rock, rock,—cold, barren rock! Once only was there a pleasant change, when the character of the rock changed from granite, too constantly disintegrated by the frost to permit of any growth of vegetation, to a formation which, by its com-

position or the direction of its cleavage, is "more capable of resisting that mighty leveller of the high places of the earth." There, lichens of the most varied and beautiful colours enriched the cliffs, making "a sunshine in the shady place."

At one point of the descent the travellers were menaced with a grave danger. A precipice barred their way to such an extent that it seemed impossible to pass it; but on cautiously peeping round a projecting rock they caught sight of a ledge on the other side which appeared to promise a means of safety. "It was an ugly place; the face of the rock went sheer down some hundreds of feet, and you had, whilst clinging to the rock, to cast one leg round it, and feel for a resting-place for the foot. As we were not tied, a slip would have proved fatal. Happily," says Mr. Anderson, "we all got round safely, and after this we but once more encountered any serious peril. That was in passing a tall cliff topped by a glacier, whose ice pinnacles here and there stood out over the edge, and appeared ready to fall. There was no other way to go, and we all hurried along as fast as the steepness of the rocks would allow, keeping as close to the cliff as possible. My companions seemed fully to appreciate the danger. Many a wistful glance was cast upwards, and I

felt very glad when we had left the place far behind."

The gradual reduction in the size of the rocks was a circumstance which attracted Mr. Anderson's attention during his descent. The fragments became smaller and smaller, and finally were found to be reduced to earth enlivened with patches of grass and wild flowers. Larger grew these patches, and more numerous, until the whole mountain-side bloomed with verdure.

At last they approached the glacier, and welcome was its rugged surface of crevassed ice, for already the "shades of evening" were gathering over the scene. As they entered upon the Lower Glacier, heavy rain came on, and dismal enough was the rest of the journey. However, it was accomplished in safety; and the adventurous traveller, with his companions, arrived at the hotel about nightfall, crowned with the glory of having been the first to gain the summit of the Schreckhorn.*

* The Greater Schreckhorn was successfully ascended in 1861 by Mr. Leslie Stephen.

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